



United States Department of Agriculture



Natural Resources Conservation Service

Rick Ellsmore, State
Conservationist

2019 Drinking Water Source Protection
Conference

May 16, 2019



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USDA Natural Resources Conservation Service (NRCS)

- Mission is to **improve, protect, and conserve natural resources on private lands** through a cooperative partnership with [state](#) and [local agencies](#)
- Provides **technical and financial assistance** on private lands
- The financial assistance is authorized by the **Farm Bill**, a law that is renewed every five years.



USDA Natural Resources Conservation Service

- The Conservation Title (Title 2) of the Farm Bill provides the funding to agricultural producers.

*All of these programs are voluntary and must include a conservation plan

- Conservation Title is approximately 8% of the Farm Bill



NRCS PROGRAMS

Environmental Quality Incentives Program (EQIP)

The purpose of EQIP is to provide assistance to landowners to help them improve their soil, water and related natural resources, including grazing lands, wetlands, and wildlife habitat.

Conservation Stewardship Program (CSP)

CSP is targeted to producers who maintain a higher level of environmental stewardship.

Regional Conservation Partnership Program (RCP)

RCP consolidated four programs from the prior 2008 Farm Bill. It aims at more regional or watershed scale projects, rather than individual farms and ranches.



NRCS PROGRAMS (cont'd)

Agricultural Conservation Easement Program (ACEP)

ACEP was another consolidation effort of the 2014 Farm Bill, which includes the former Grasslands Reserve Program, Farm, and Ranch Lands Protection Program, and [Wetlands Reserve Easements](#).

Healthy Forests Reserve Program

(HFRP) Landowners volunteer to restore and protect forests in 30 or 10 year contracts. This program hands assisting funds to participants.



2018 Farm Bill



1. Authorizes increased payments for certain practices deemed more environmentally beneficial, as determined by each state in consultation with the State Technical Committee (up to 10 practices per state).
2. 10 percent of all EQIP funds has to be used for practices that benefit wildlife habitat (previously 5%).
3. Dedicate at least 10% of the total funds for conservation programs to be used for Source Water Protection.



2020 National Farm Bill Funding

EQIP – \$1,750,000,000

ACEP – \$450,000,000

CSP – \$725,000,000

RCPP – \$300,000,000

HFRP - \$12,000,000

Total - \$3,237,000,000 x 10% =

\$323,700,000 toward Source Water Protection in 2020.

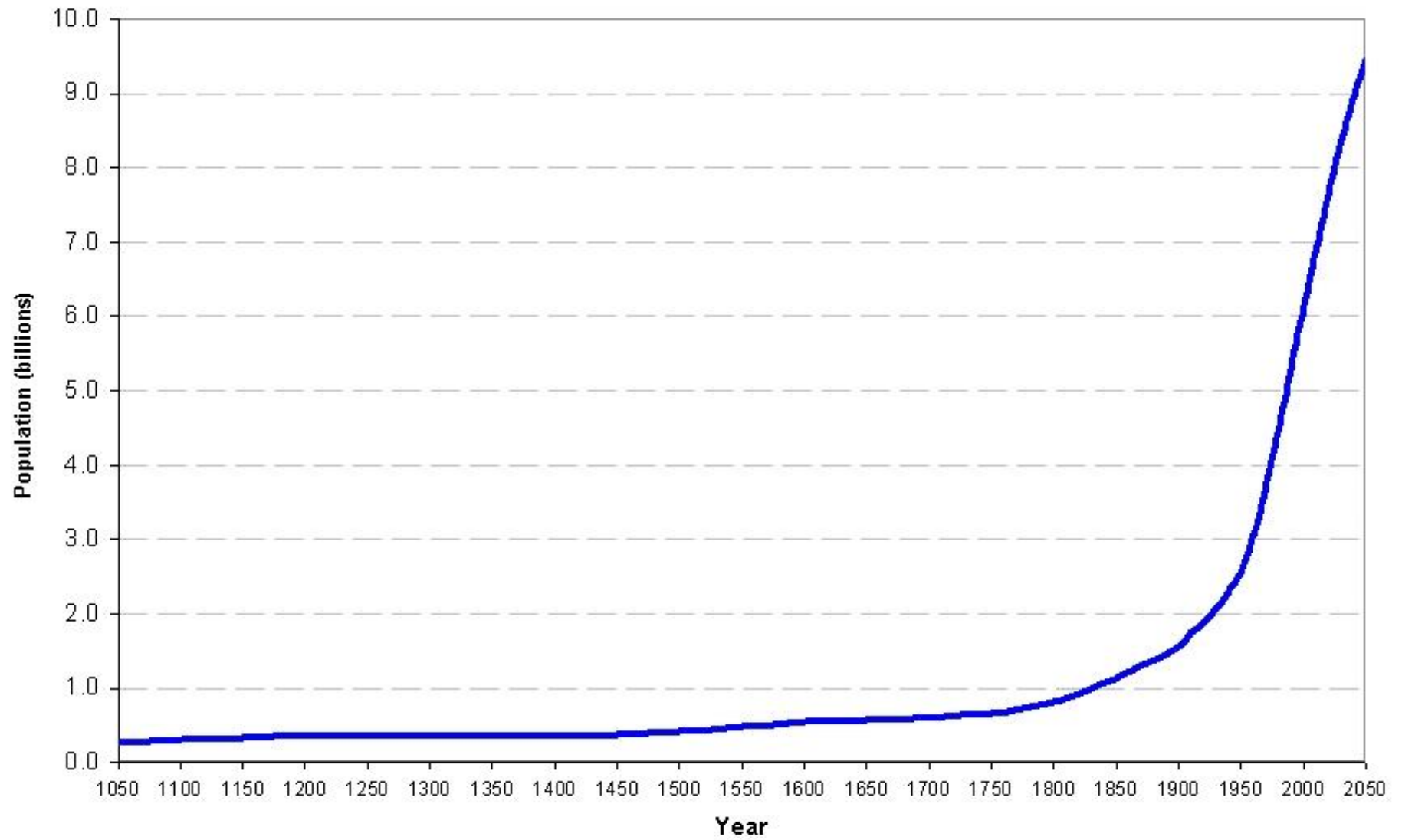


World Facts Agriculture/Water

- 9 Billion People on Earth by 2050
- 11 Billion People by 2100
- Severe droughts and flooding are becoming the norm
- We have a shrinking agricultural base – over last 30 years we have lost 43 million acres to development
- 2.4 Billion do not have access to proper sanitation
- 3.9 Billion living with water stress
- Global demand for water will increase by 40% by 2030
- 14 of the last 15 warmest years on record have been in the first 15 years of this century



World Population and Growth Rate



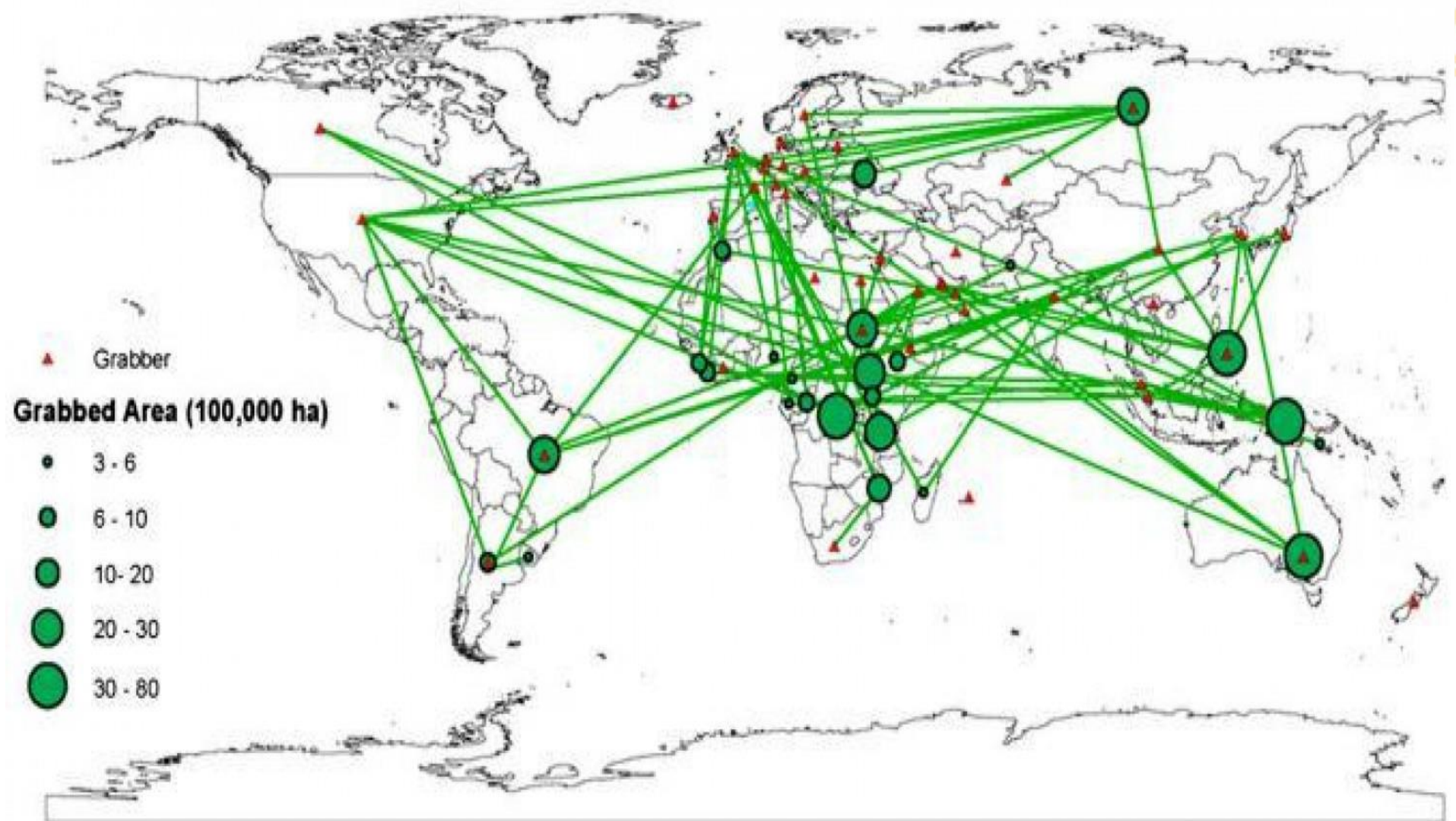
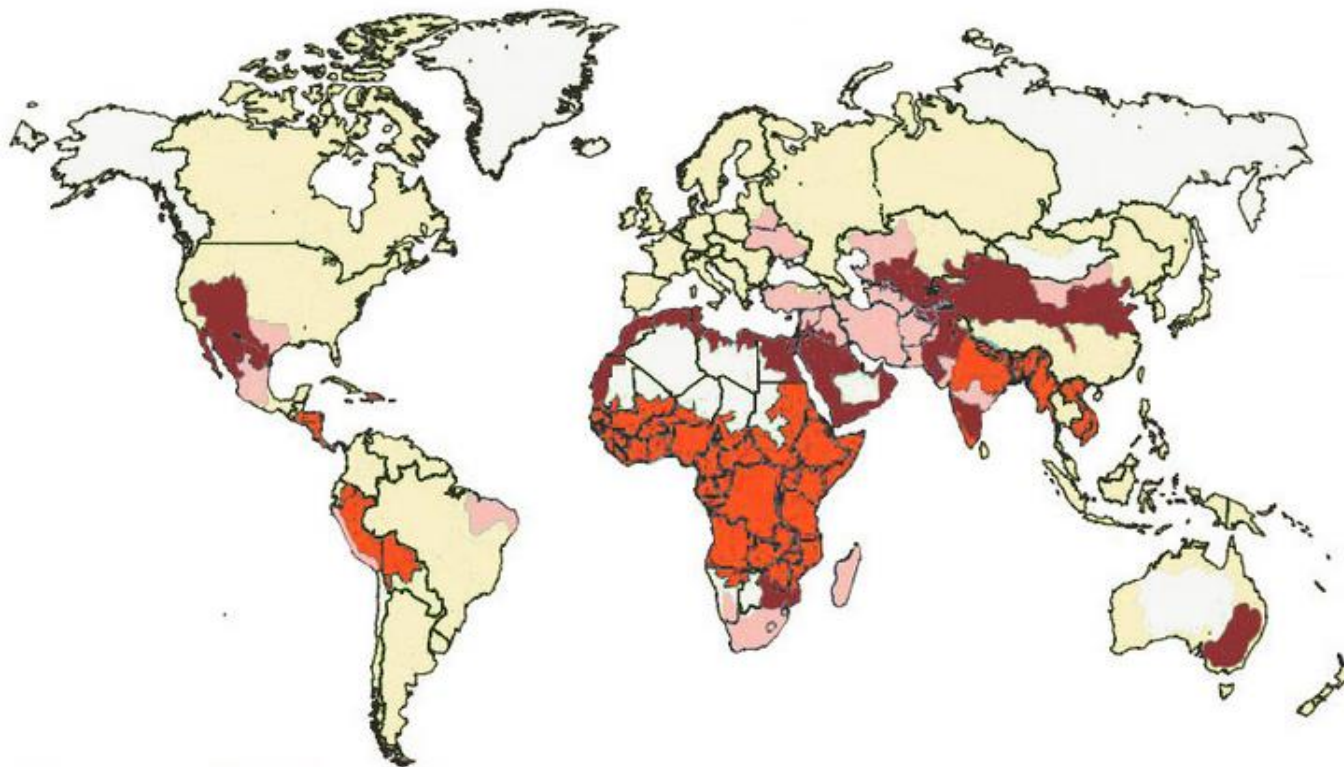


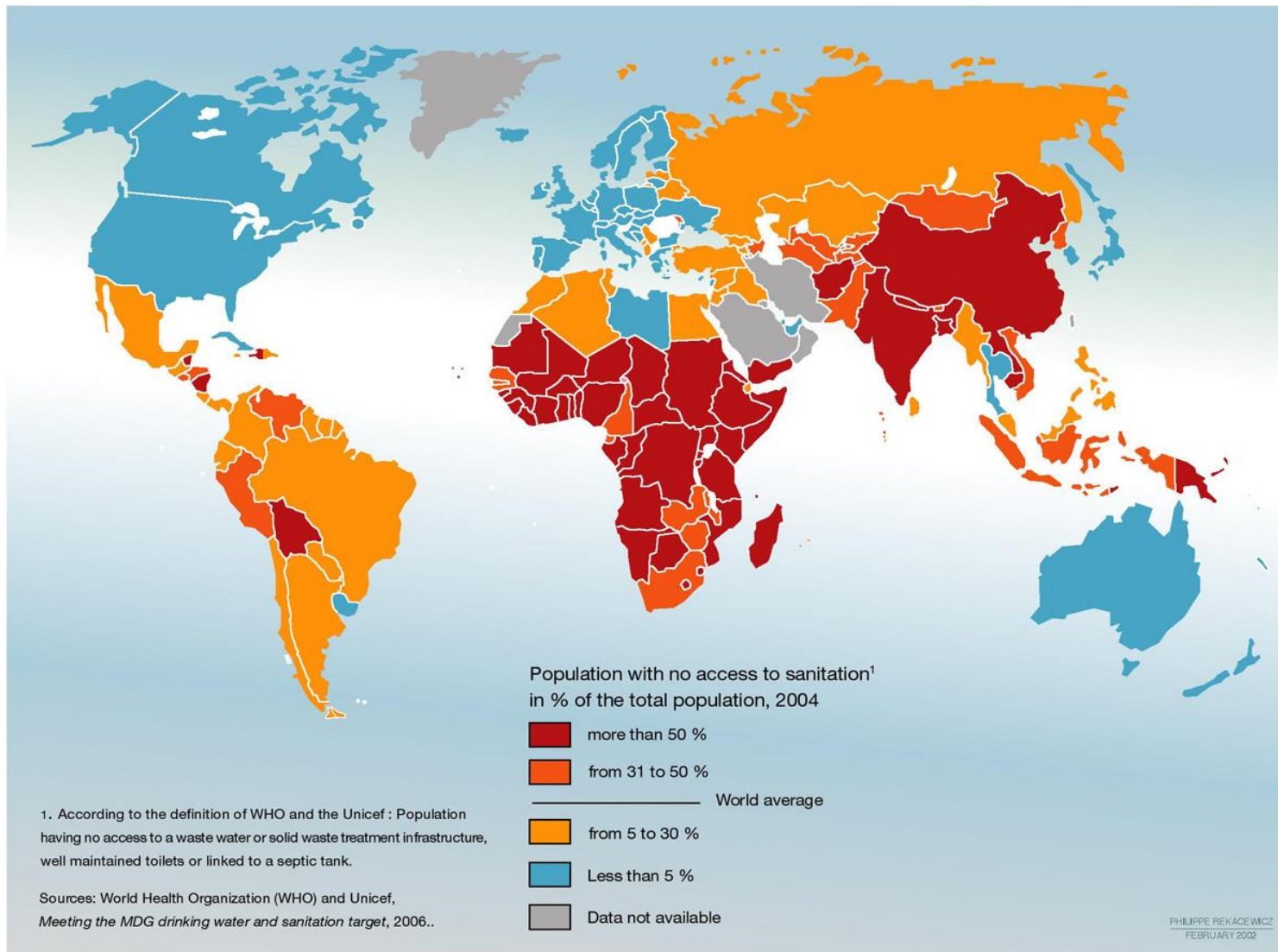
Fig. 1. A global map of the land-grabbing network: land-grabbed countries (green disks) are connected to their grabbers (red triangles) by a network link. Based on data in Table S1 but considering only 24 major grabbed countries (as in Table 1). Relations between grabbing (red triangles) and grabbed (green circles) countries are shown (green lines) only when they are associated with a land grabbing exceeding 100,000 ha.



- Little or no water scarcity.
- Physical water scarcity.
- Imminent physical water scarcity.
- Economic water scarcity.
- Not estimated.

Source: 4th edition of the UN World Water Development Report (WWDR4), Volume 1 (2012).



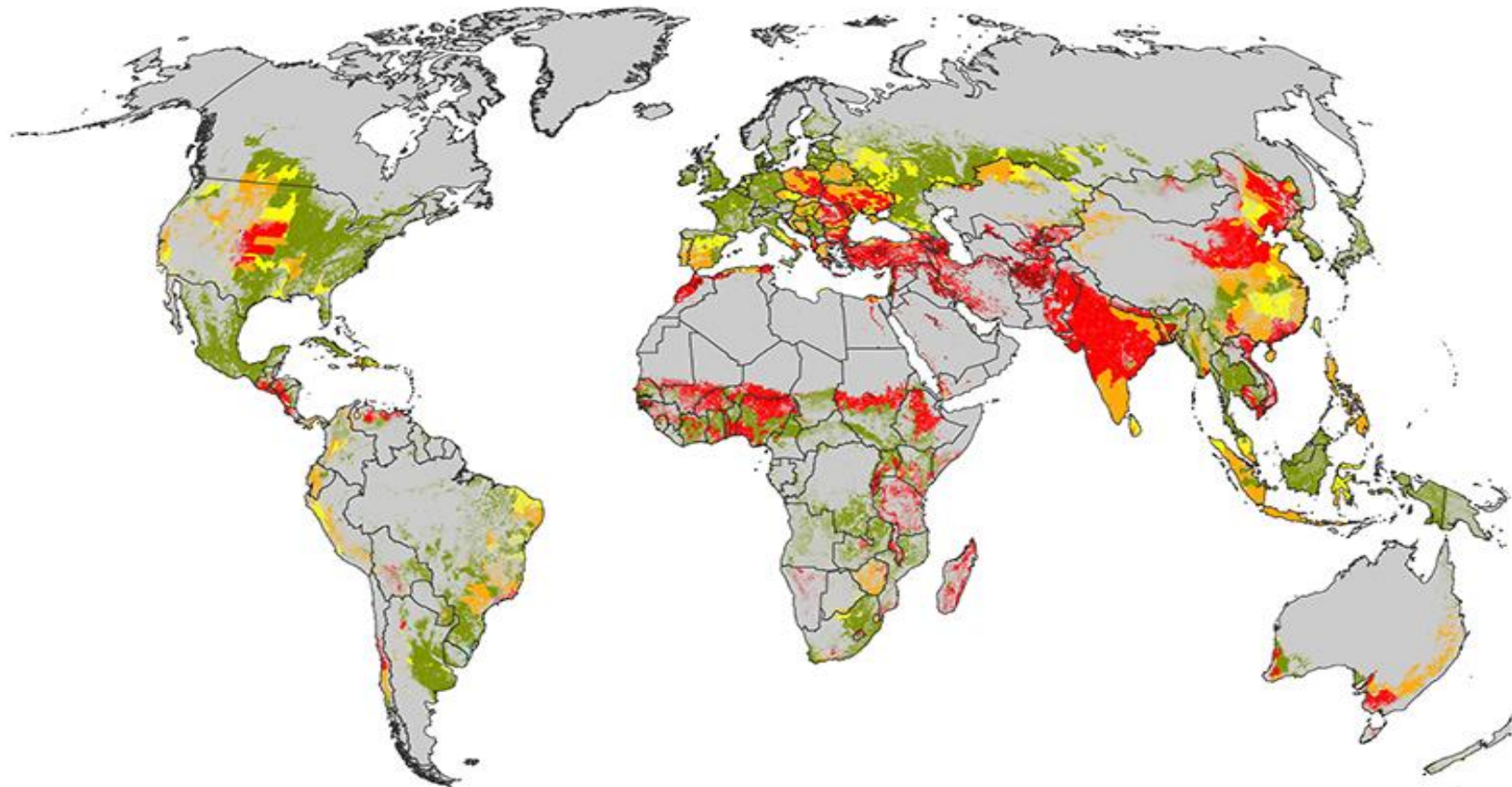


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Water stress will increase in many agricultural areas by 2025 due to growing water use and higher temperatures (based on IPCC scenario A1B)

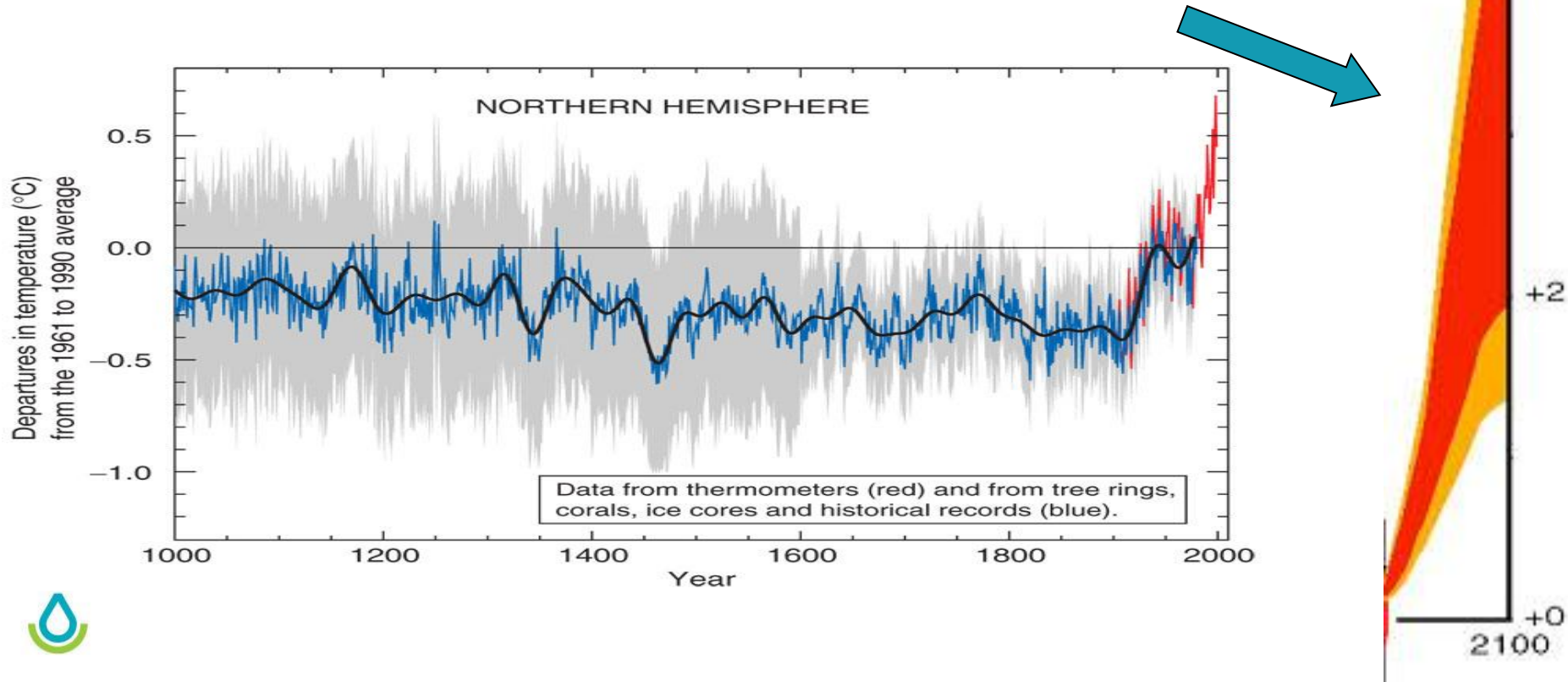


Water Stress Condition

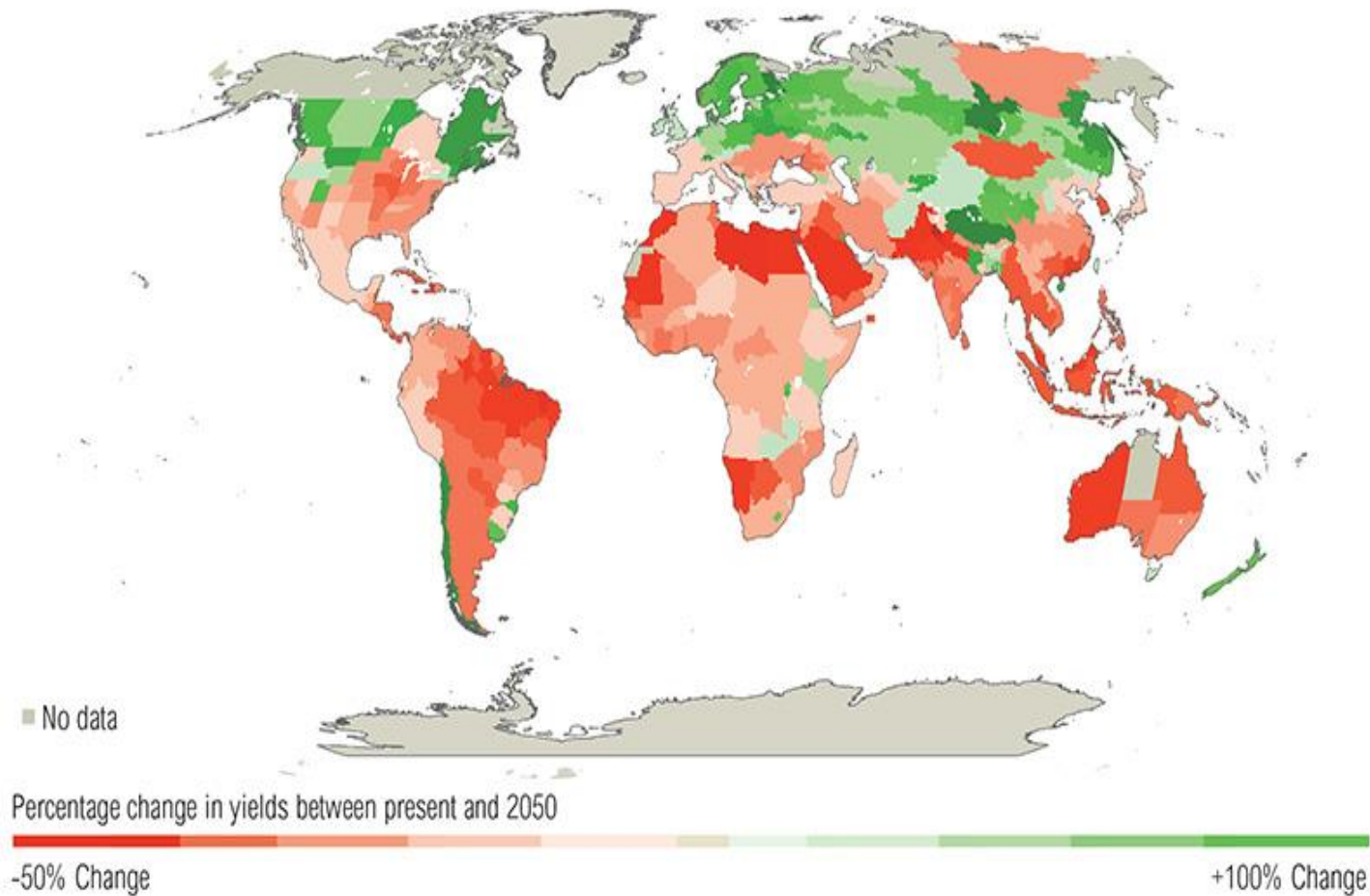




Increasing Temperature



Most studies now project adverse impacts on crop yields due to climate change (3°C warmer world)



WORLD RESOURCES INSTITUTE

Sources: <http://ow.ly/rpfmN>

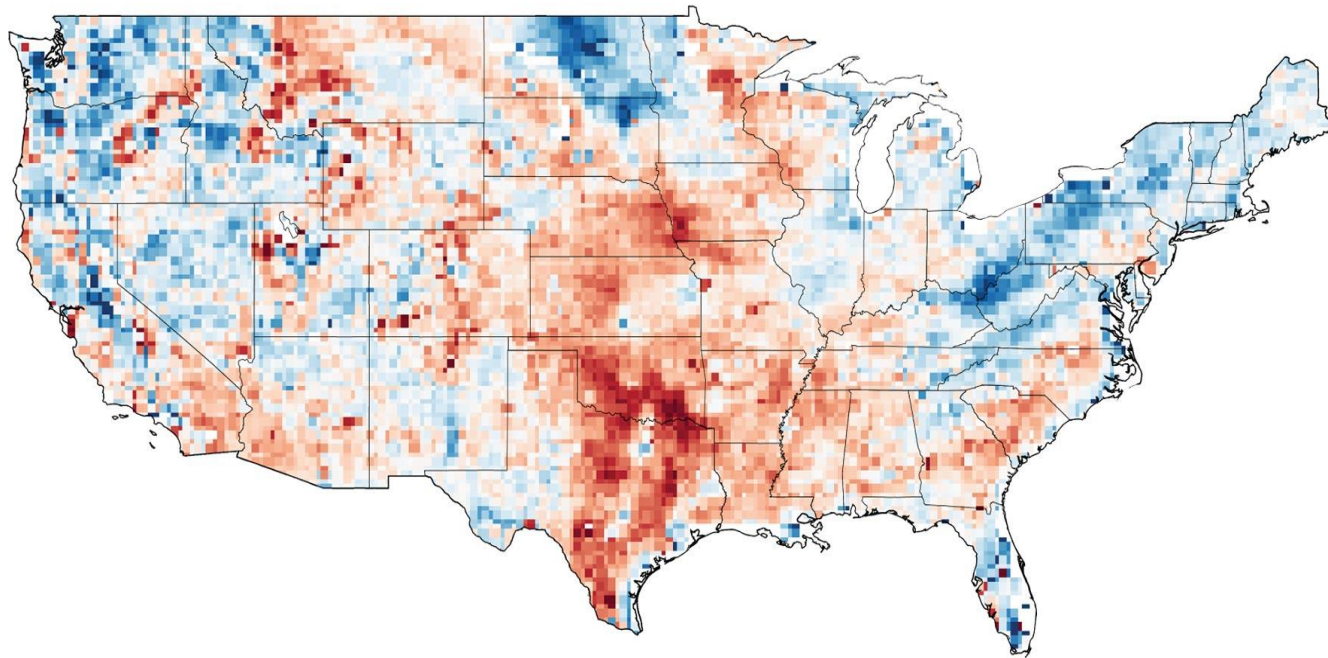
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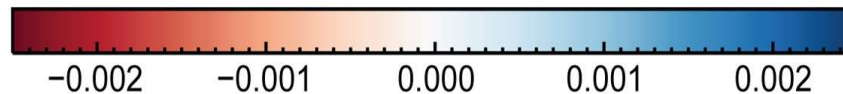
Changes Annual Soil Moisture, 1988-2010



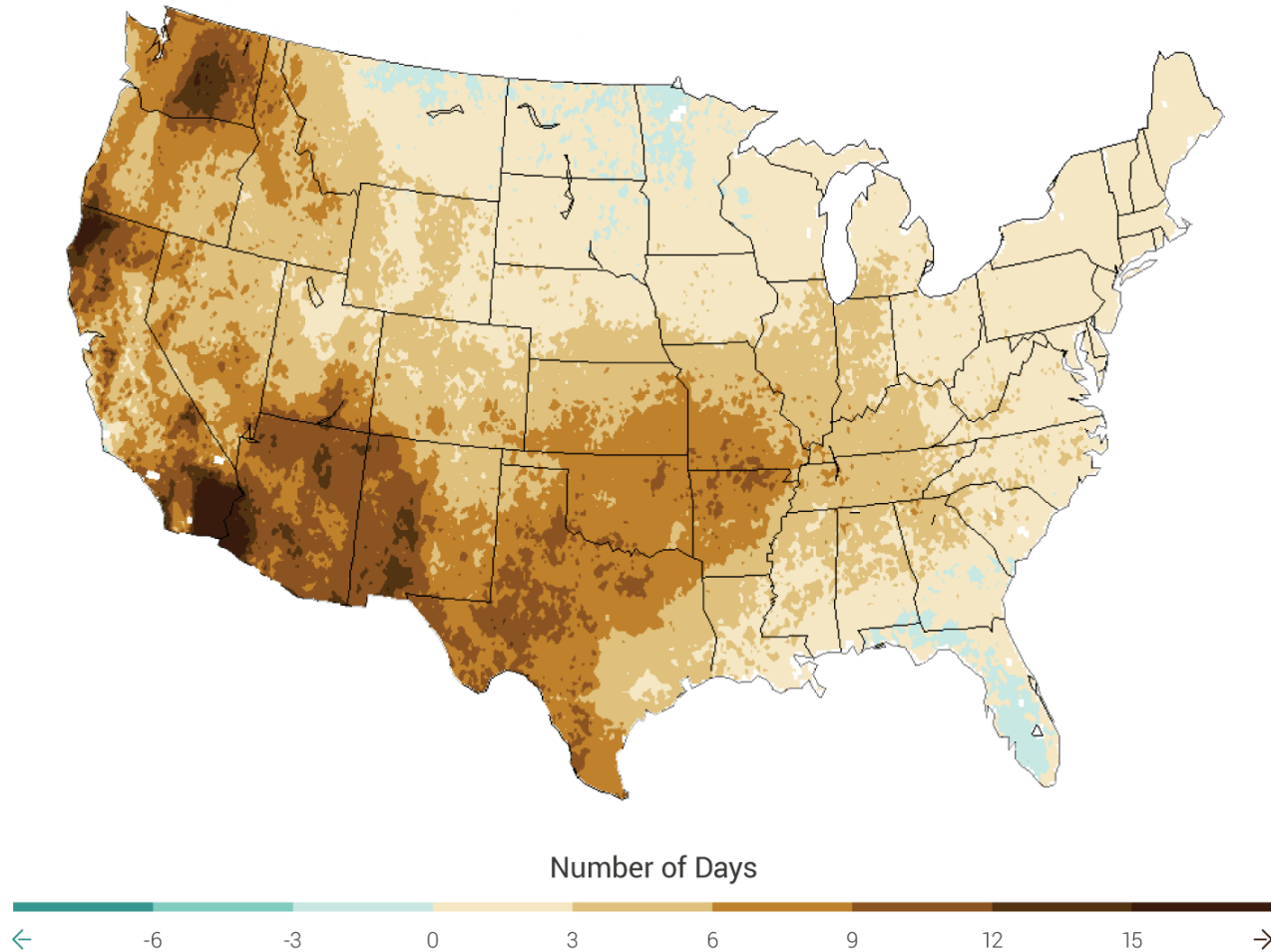
Annual Surface Soil Moisture Trends



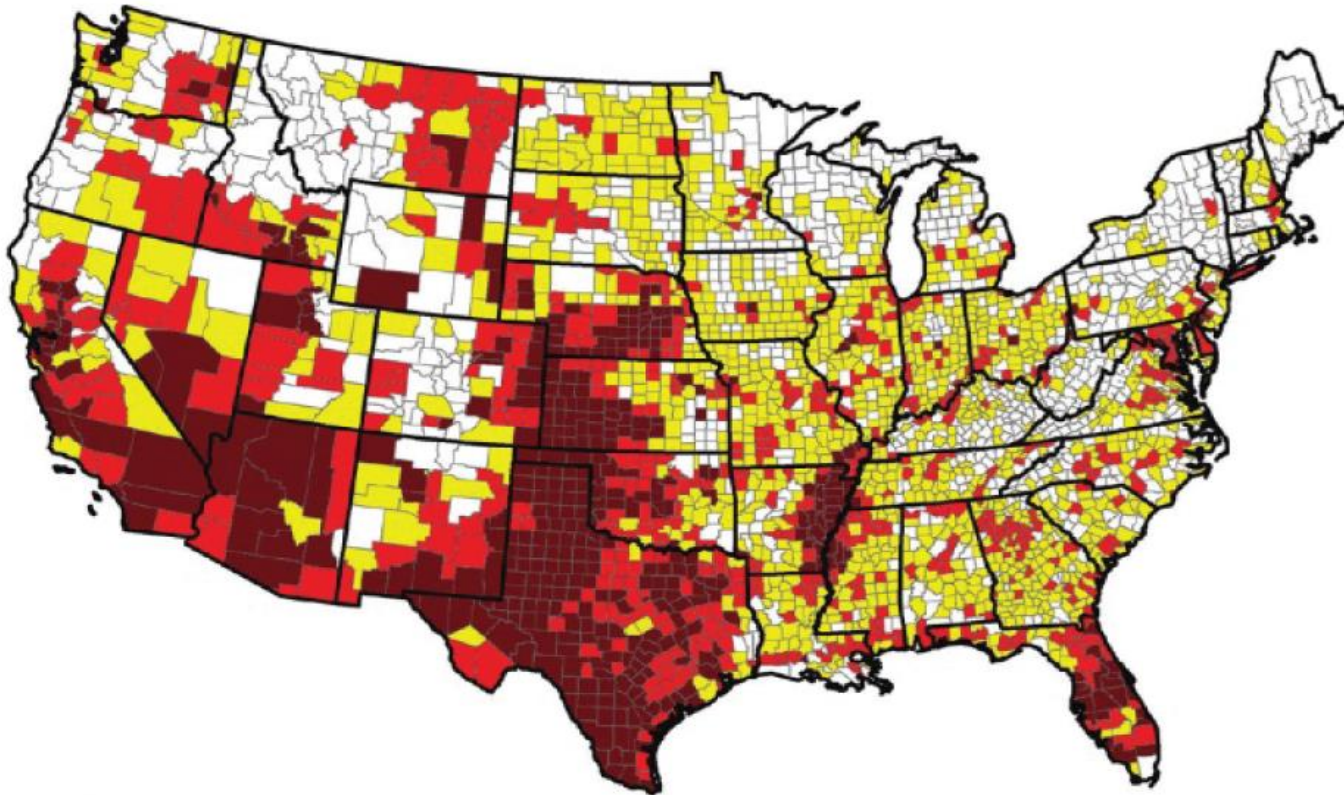
Change in soil moisture ($\text{m}^3 \text{m}^{-3} \text{y}^{-1}$)



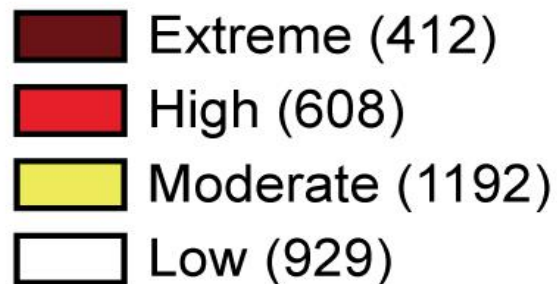
Increase in Consecutive Dry Days

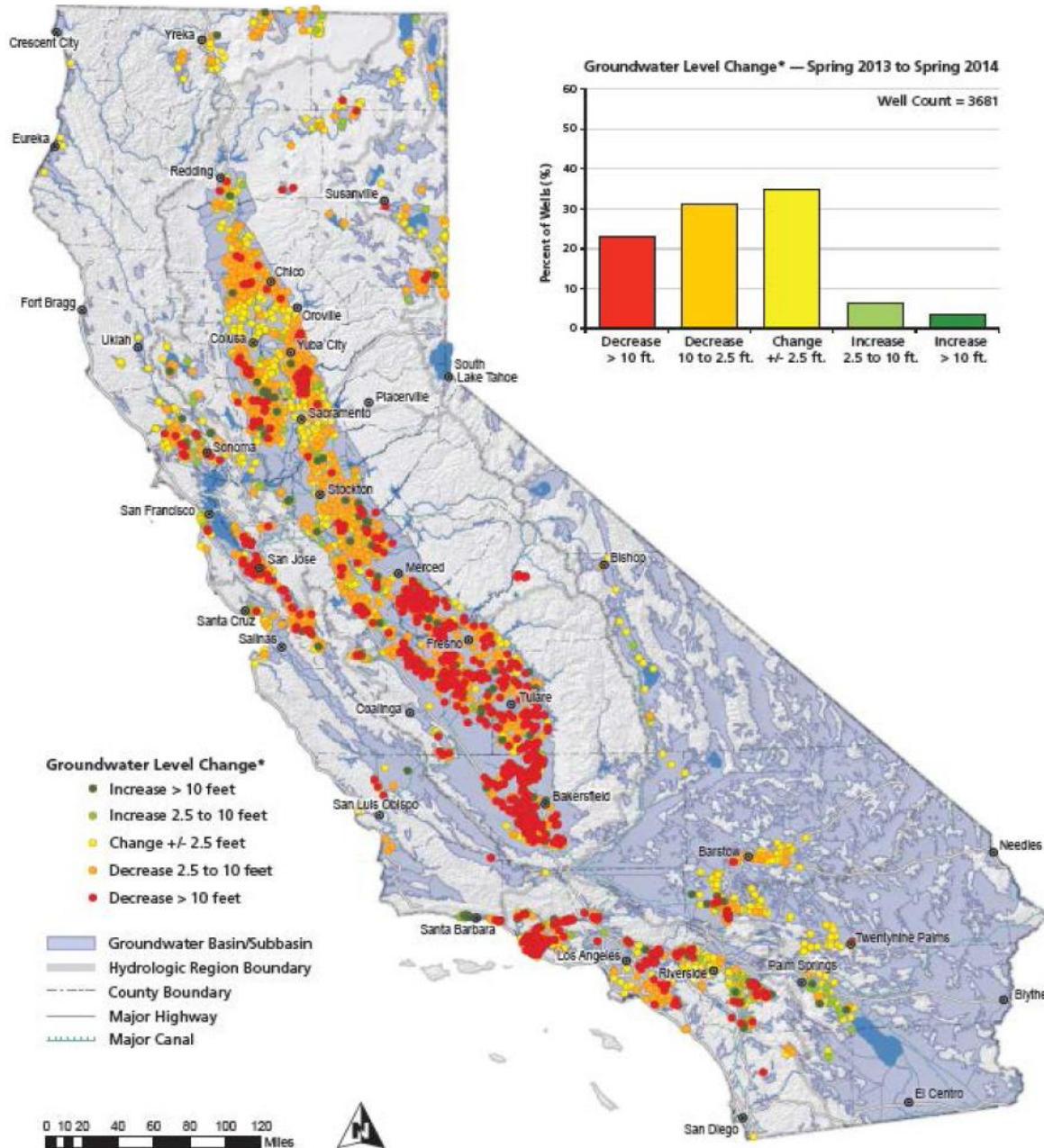


(b) Climate Change Effects

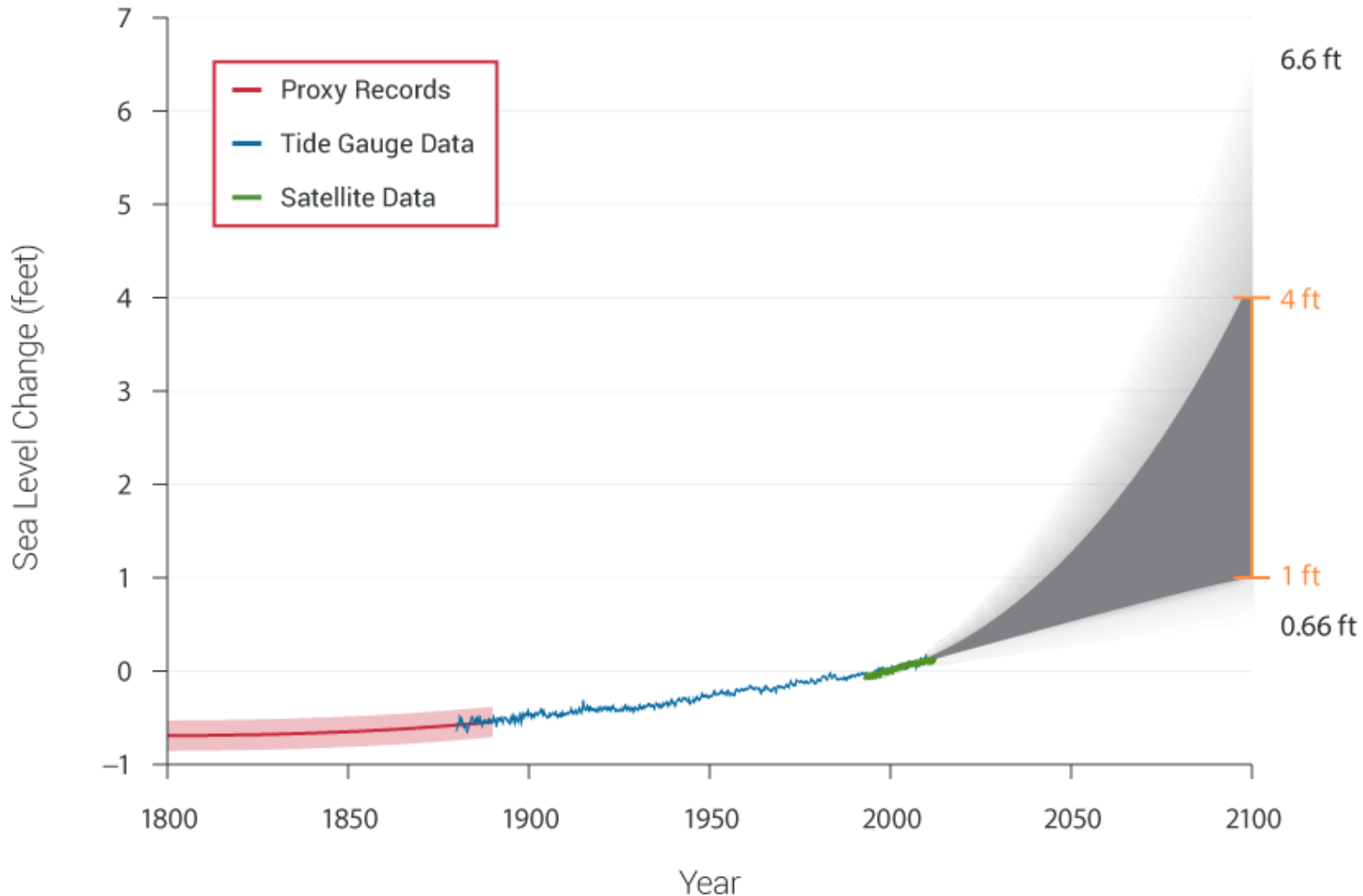


Water Supply Sustainability Risk Index (2050)

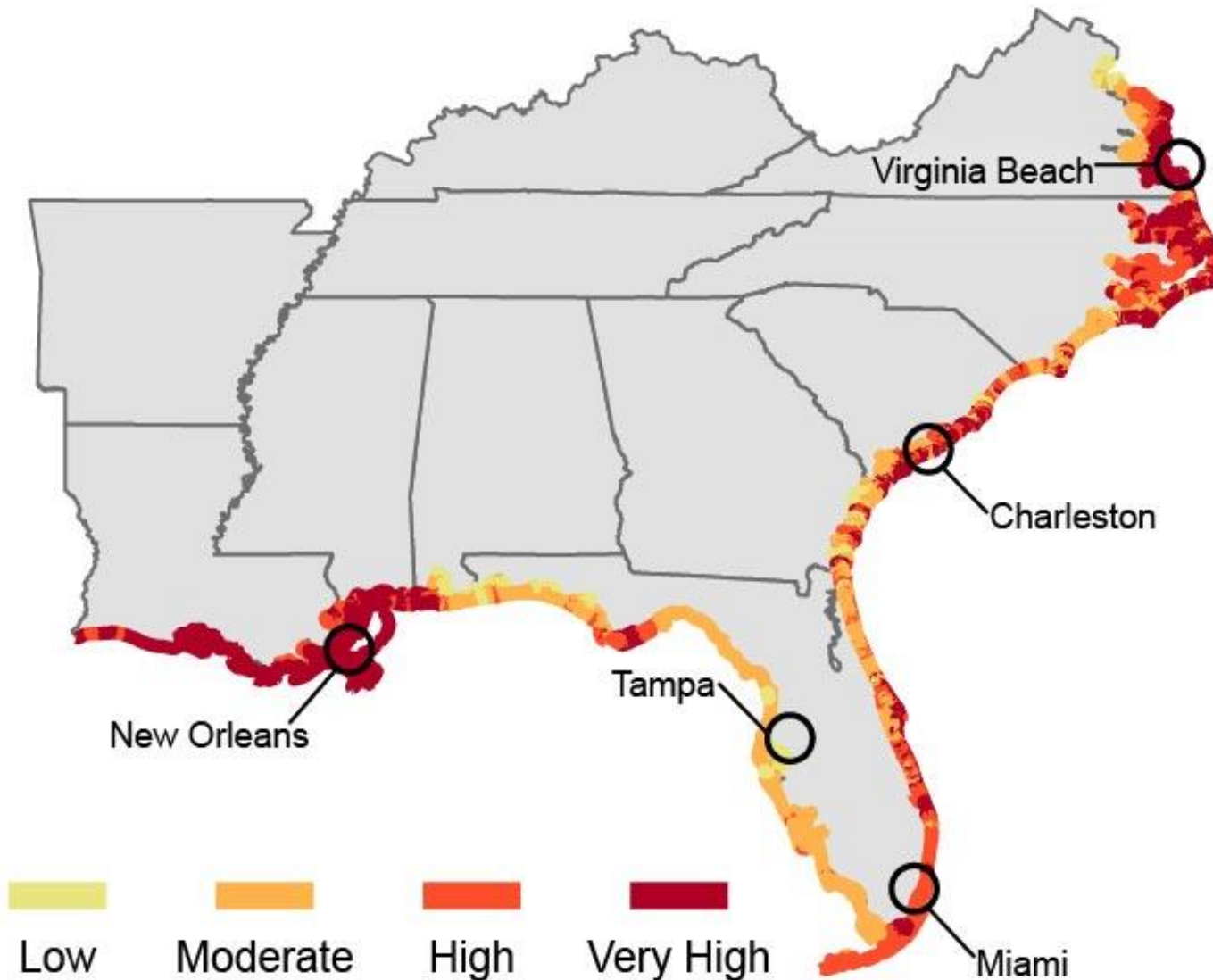




Past and Projected Changes in Global Sea Level



Vulnerability to Sea Level Rise



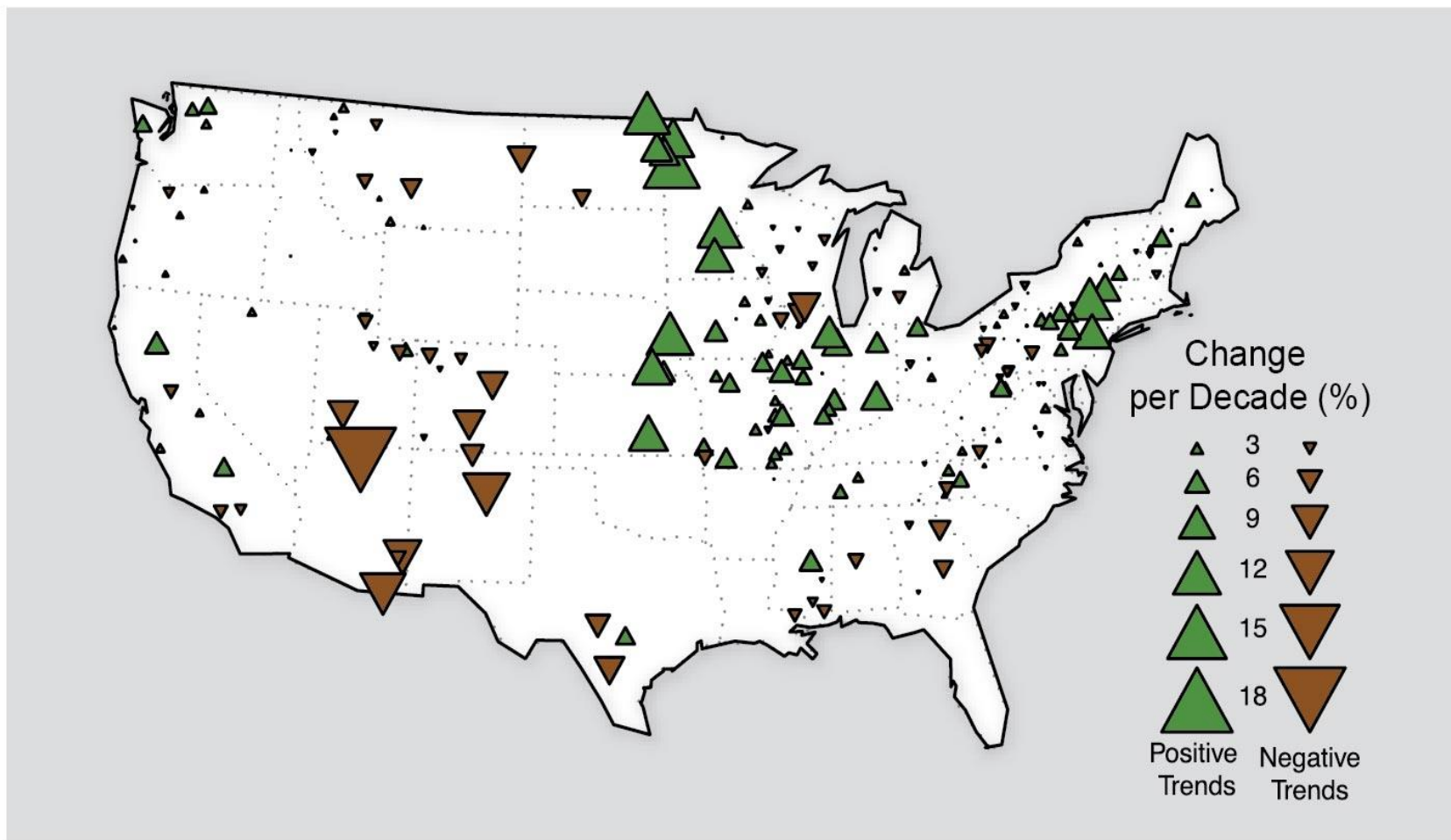


Observed U.S. Trend in Heavy Precipitation



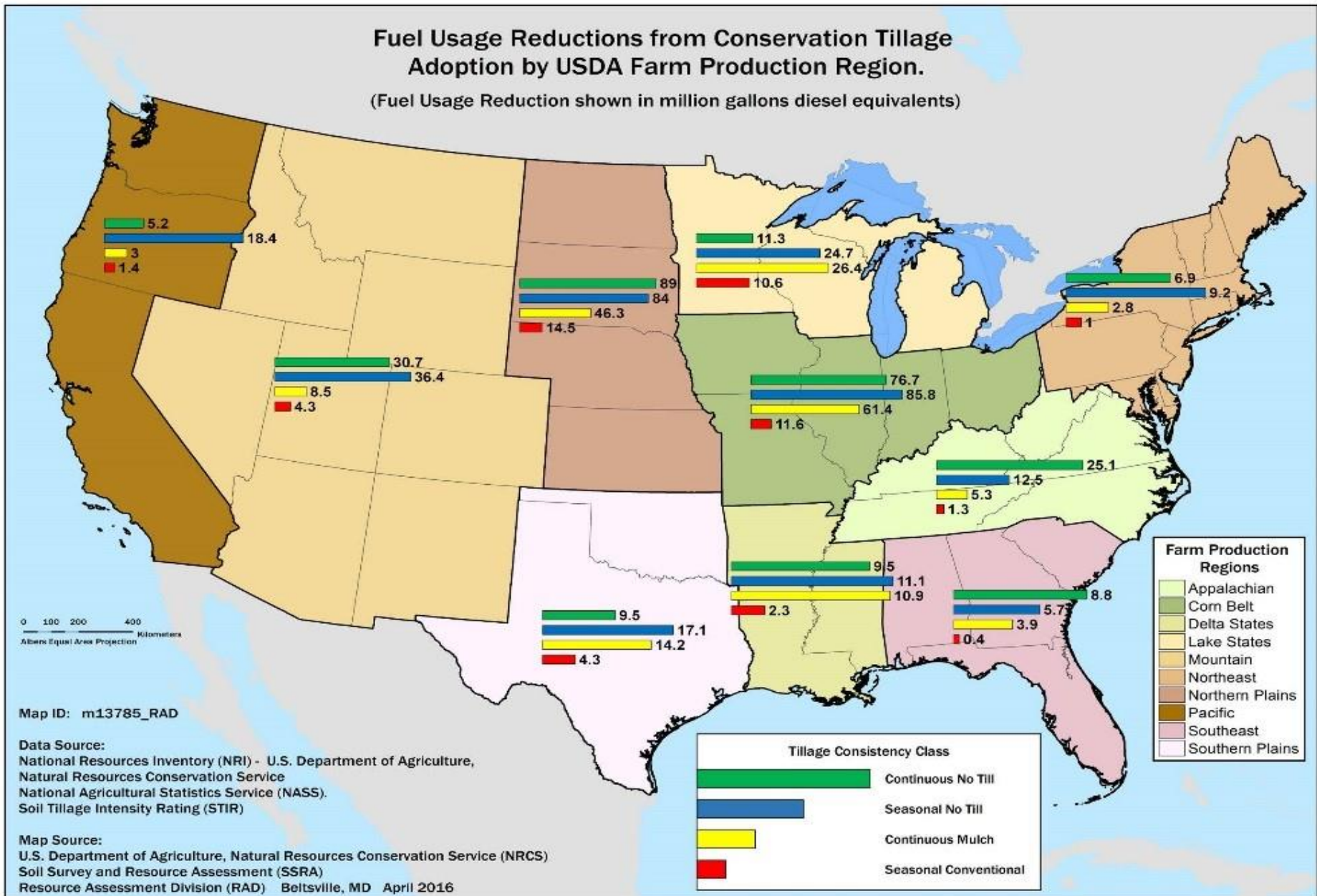
1920s - 2008

Trends in Flood Magnitude



Fuel Usage Reductions from Conservation Tillage Adoption by USDA Farm Production Region.

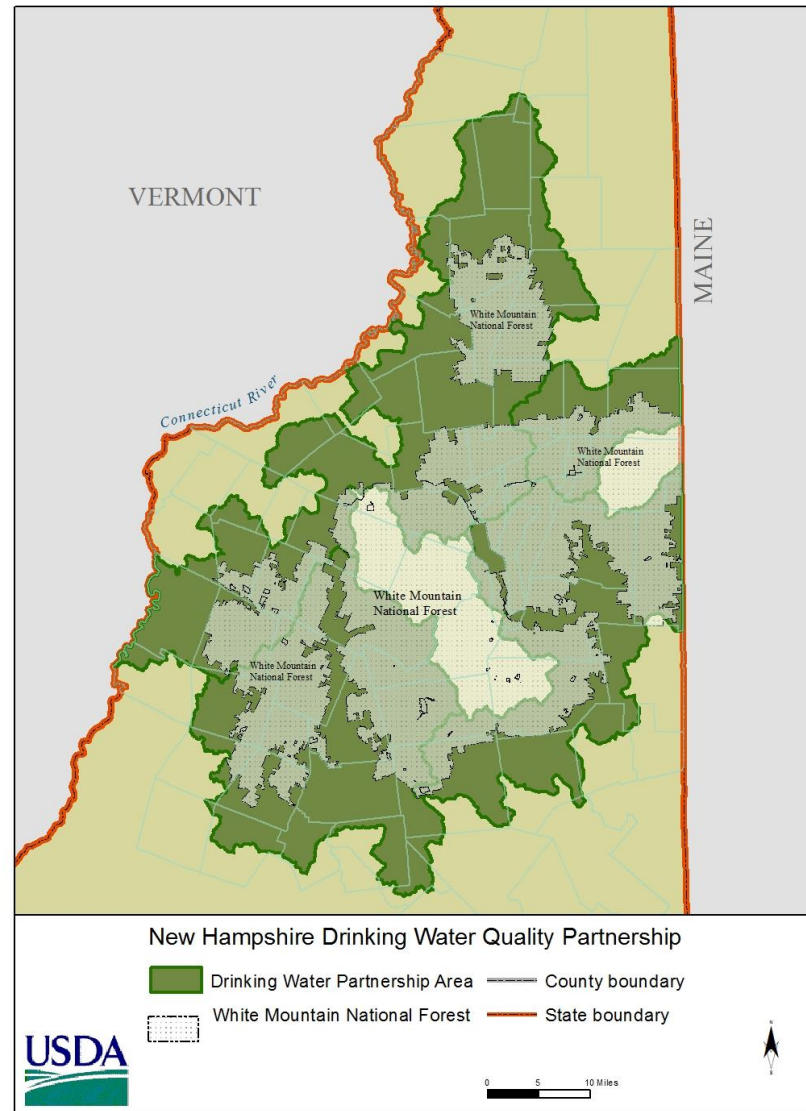
(Fuel Usage Reduction shown in million gallons diesel equivalents)



New Hampshire Efforts (Targeting)

1. 2014 Drinking Water Partnership
2. National Water Quality Initiative since 2012
3. Salmon Falls Multi-state Water Quality Initiative
4. Other Focus Areas: (Merrimack Watershed, Connecticut River Watershed (RCPP), Saco River Watershed)



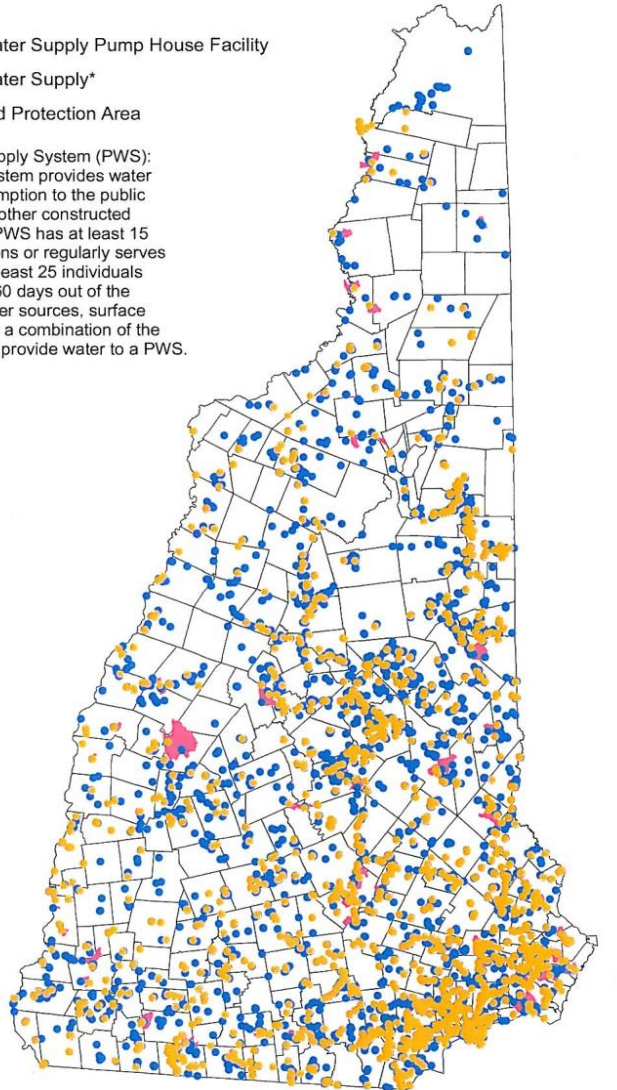


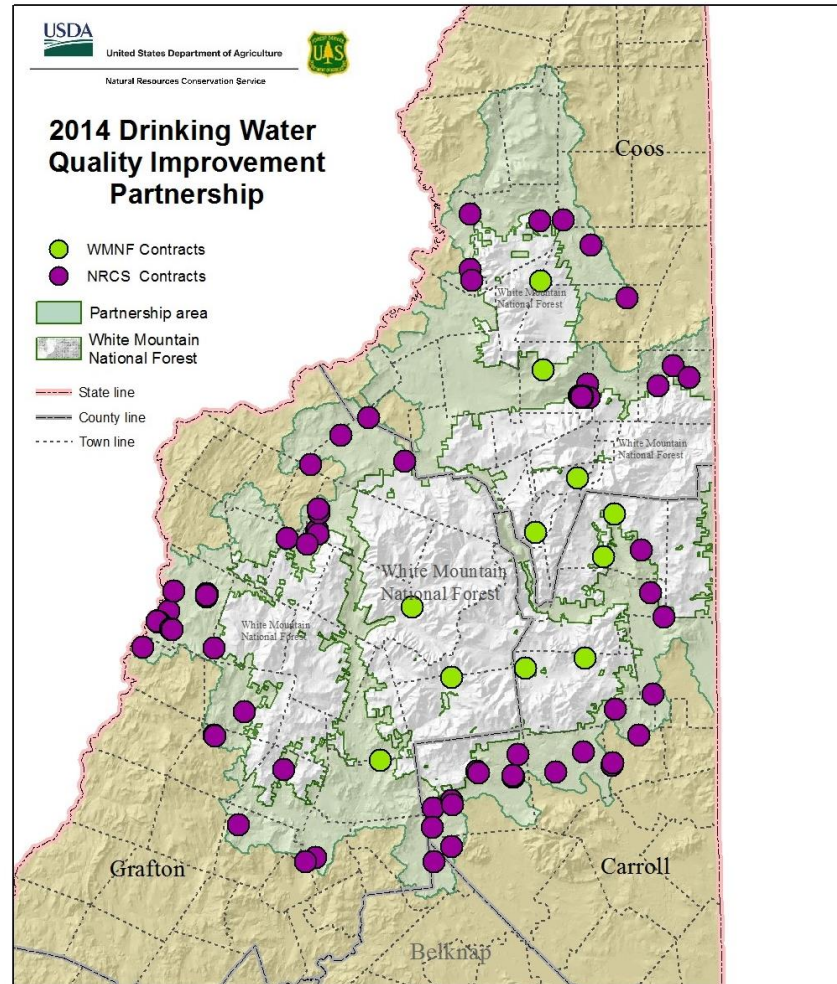
New Hampshire Public Water Supply

Legend

- Public Water Supply Pump House Facility
- Public Water Supply*
- Well Head Protection Area

*Public Water Supply System (PWS):
A public water system provides water for human consumption to the public through piped or other constructed conveyances. A PWS has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days out of the year. Ground water sources, surface water sources, or a combination of the two sources may provide water to a PWS.





County	NRCS Dollars Obligated	NRCS Contracts	NRCS Acres	Forest Service Dollars	Forest Service Contracts
Coos	\$63,665	15	1280	\$71000	4
Carroll	\$302,049	23	2800	\$75000	4
Grafton	\$375,188	27	2201	\$104000	3
Totals:	\$740,902	65	6282	\$250000	11

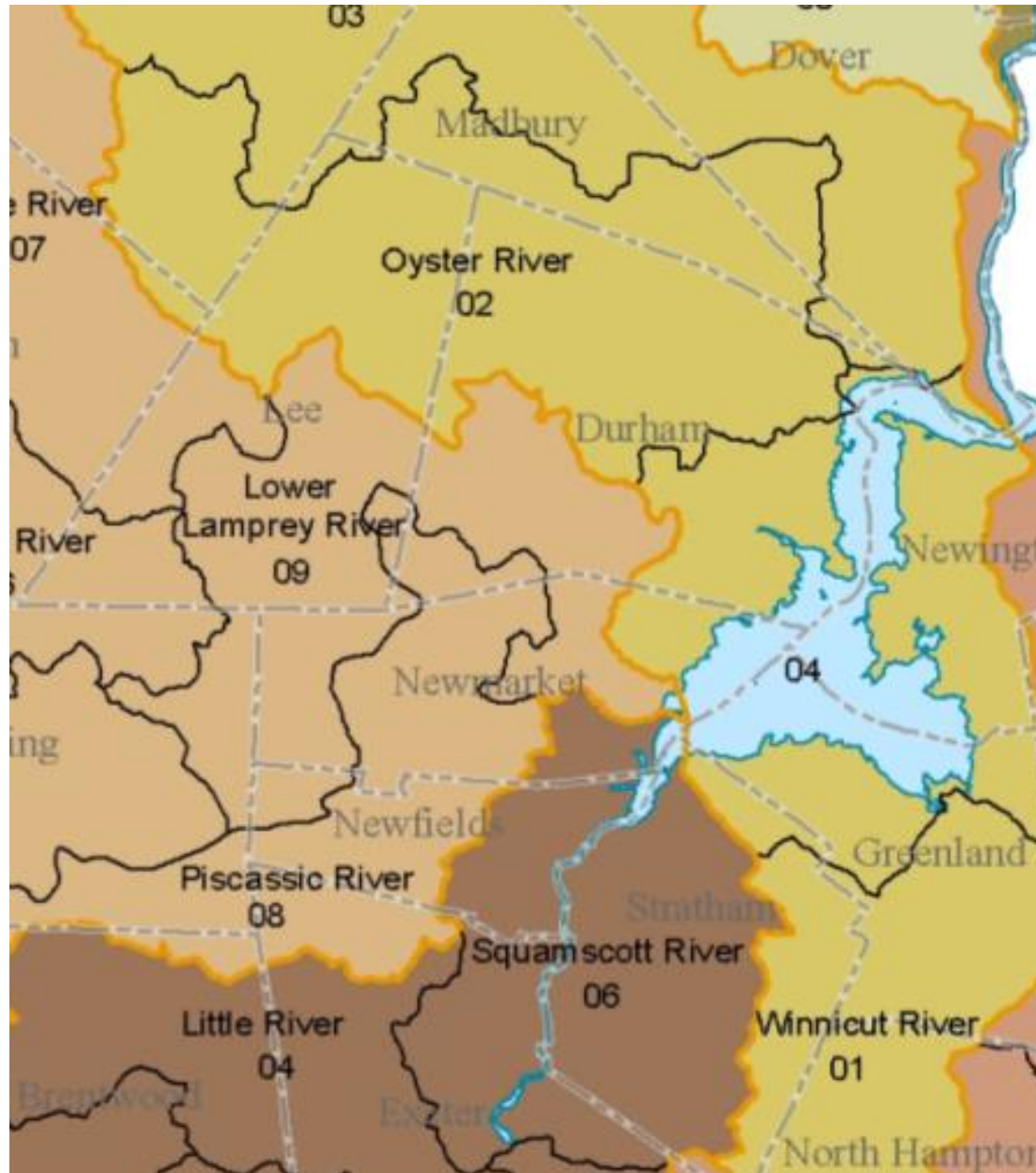
Richard P. Ellsmore, State Conservationist

Tom Wagner, Forest Supervisor, White Mountain National Forest

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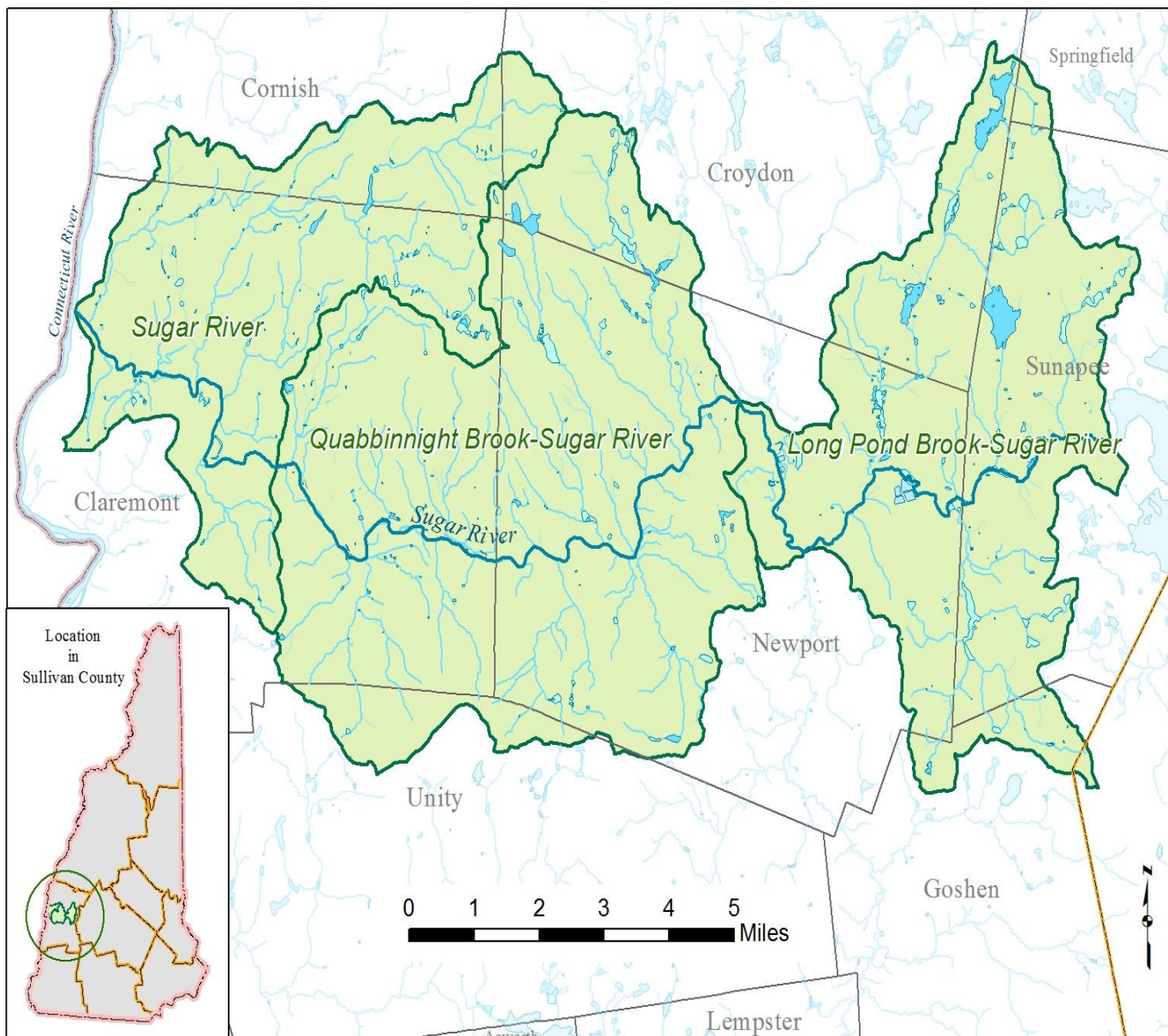




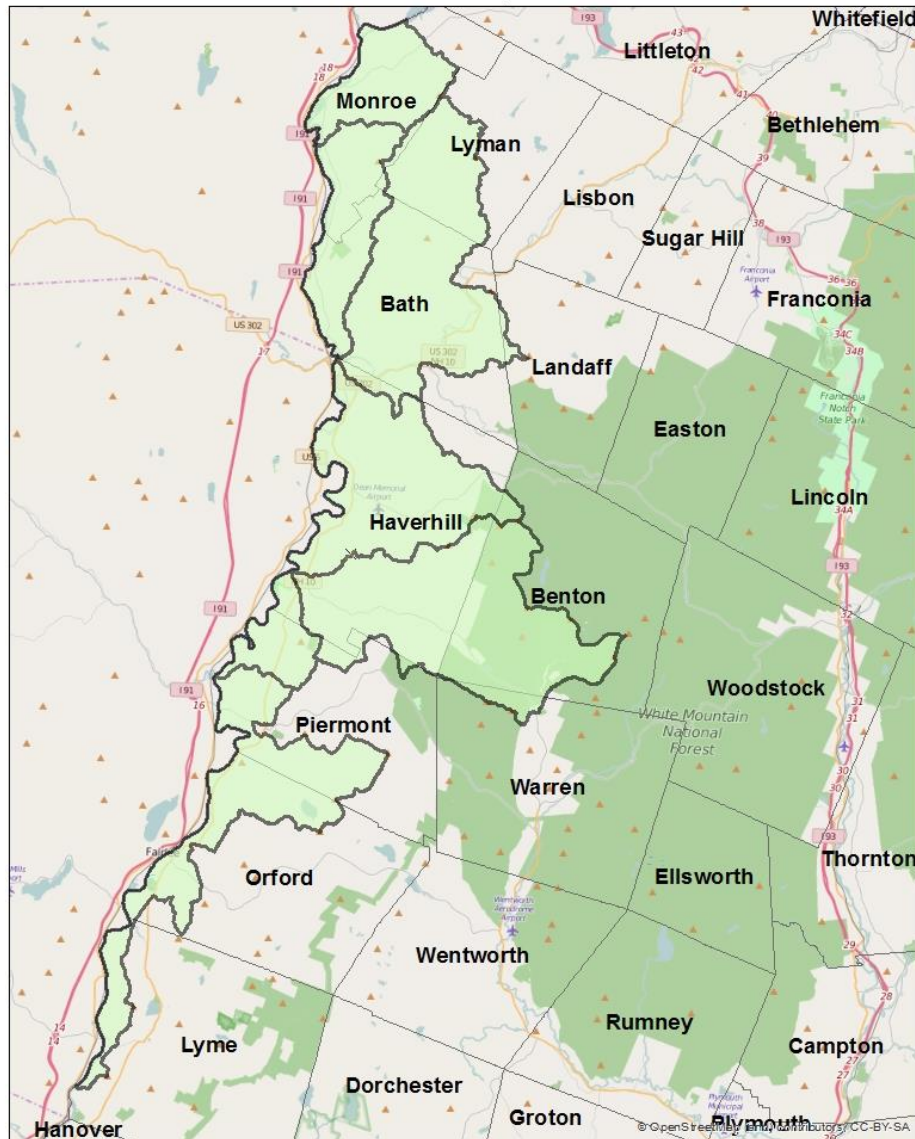
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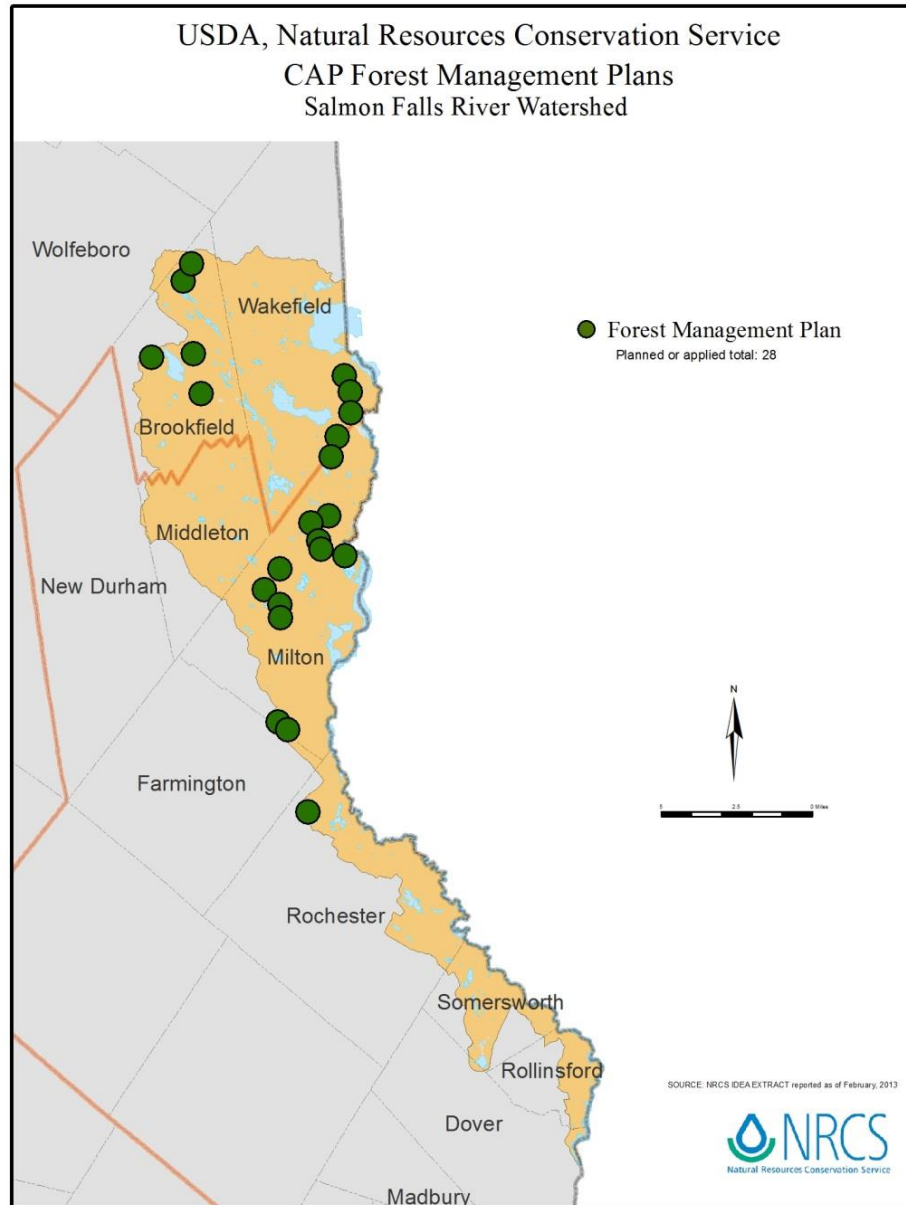
DRAFT National Water Quality Initiative Area for 2017



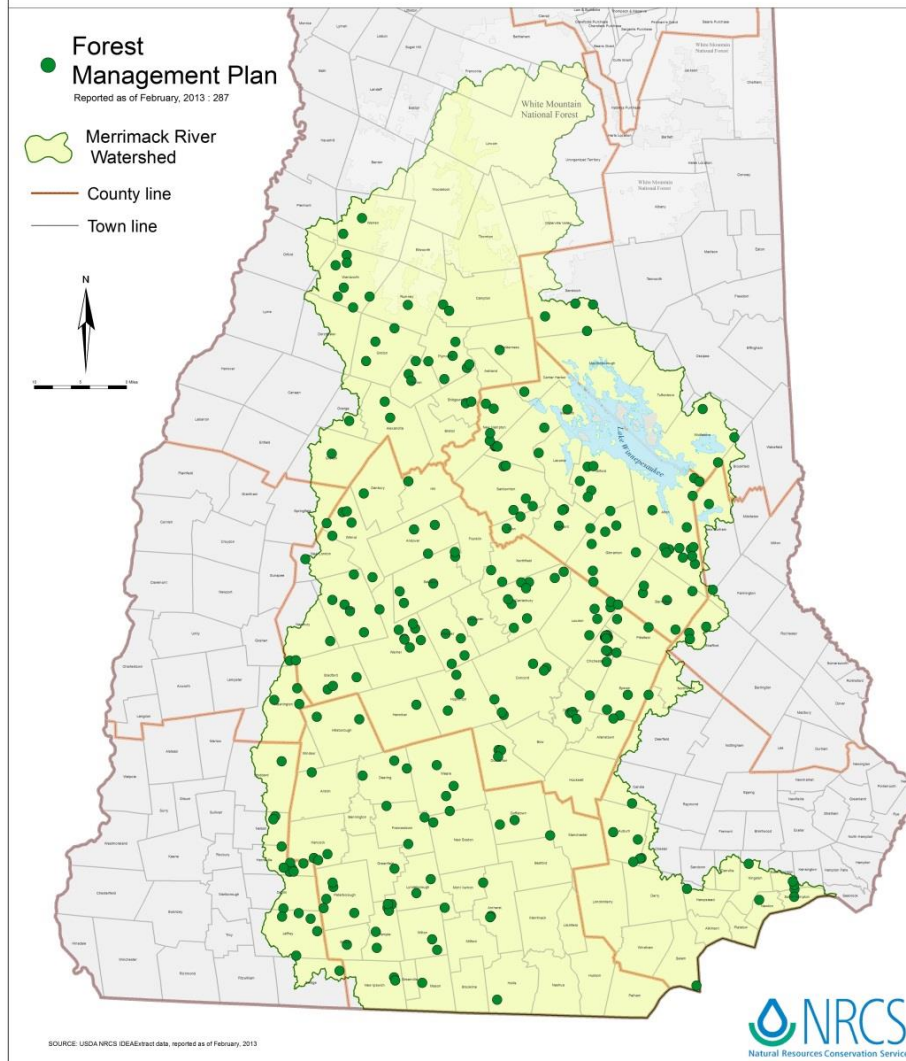
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USDA, Natural Resources Conservation Service Forest Management Plans Merrimack River Watershed



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Environmental Quality Incentives Program



1. Up to 5 million annually in New Hampshire
2. NRCS largest working lands program
3. Common NH practices – Animal waste practices, Forestry practices, CAP's, Agricultural/cropland practices.
4. NRCS provides the technical and financial (ranking) assistance.
5. Competitive/Ranking Process – 50% approval in NH







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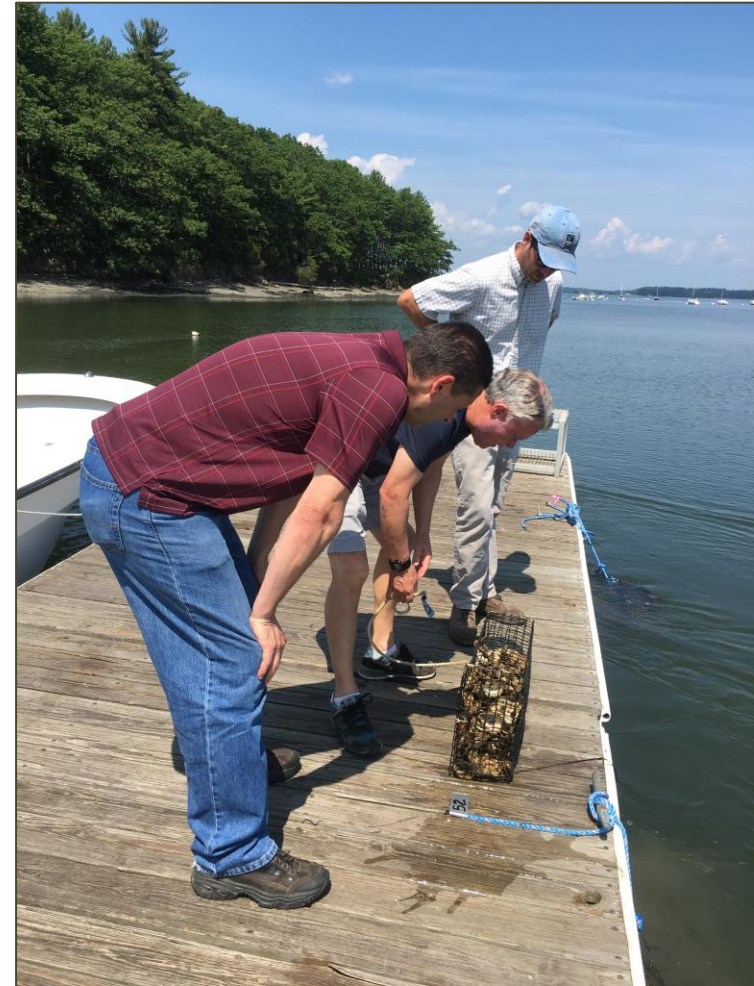
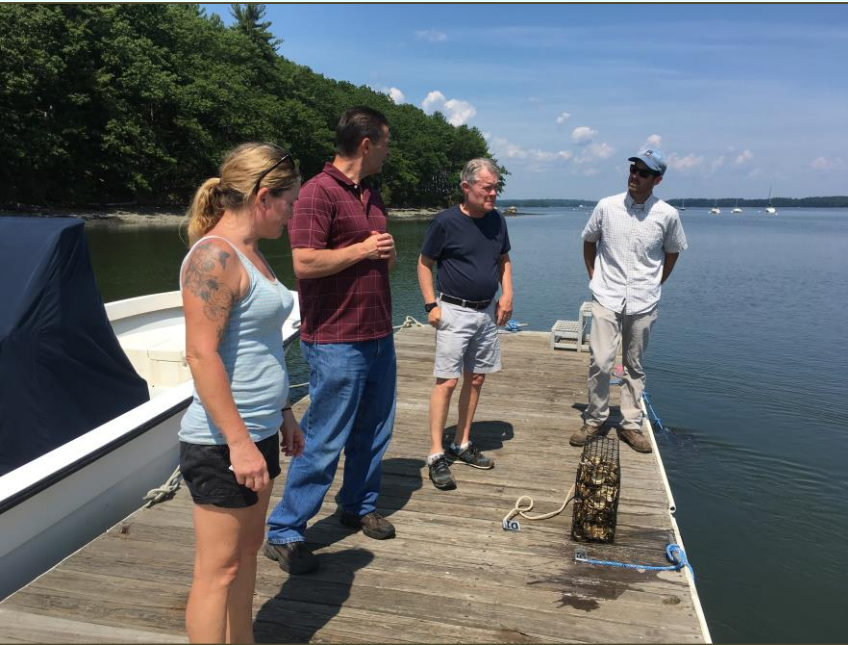
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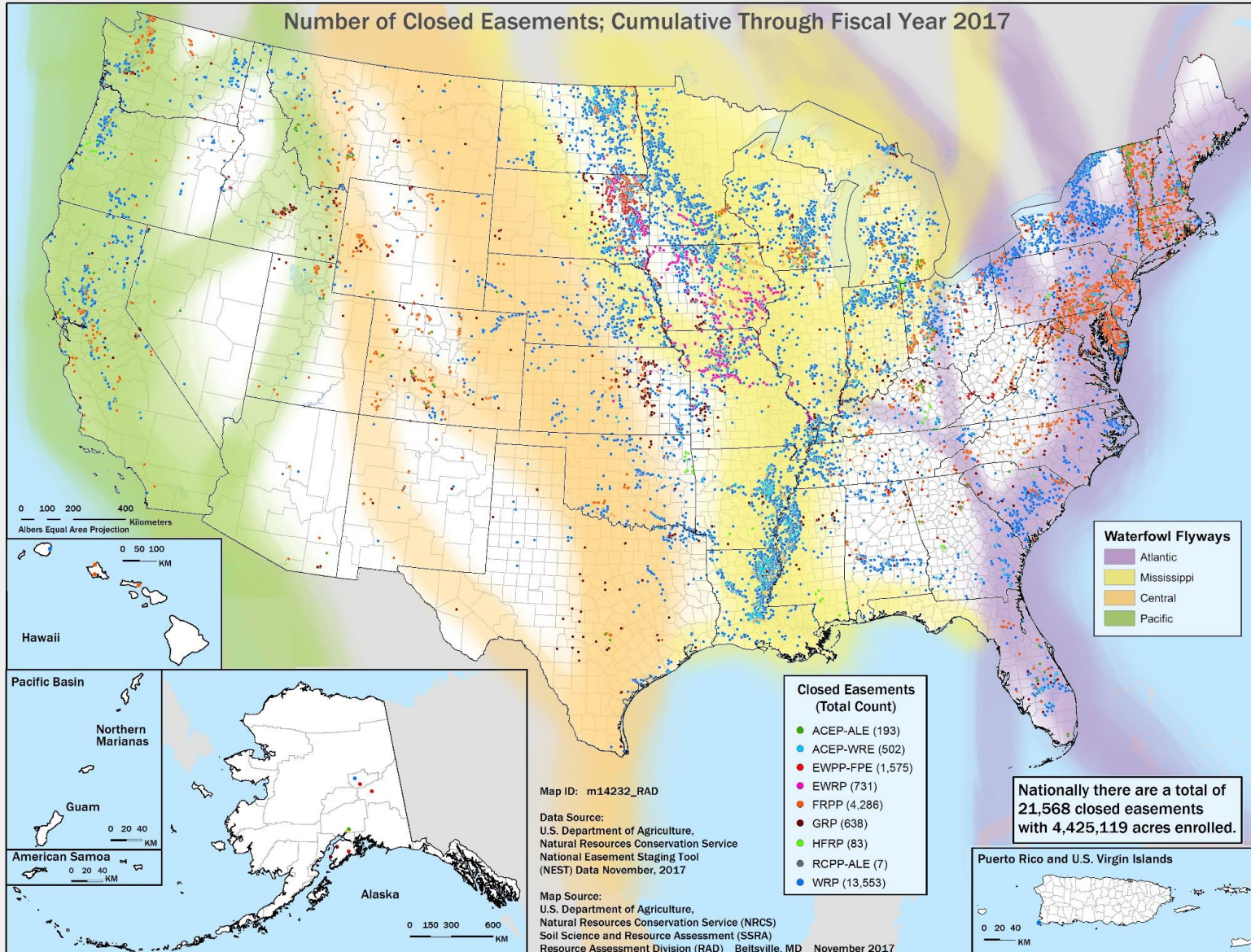
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Agricultural Land Easements

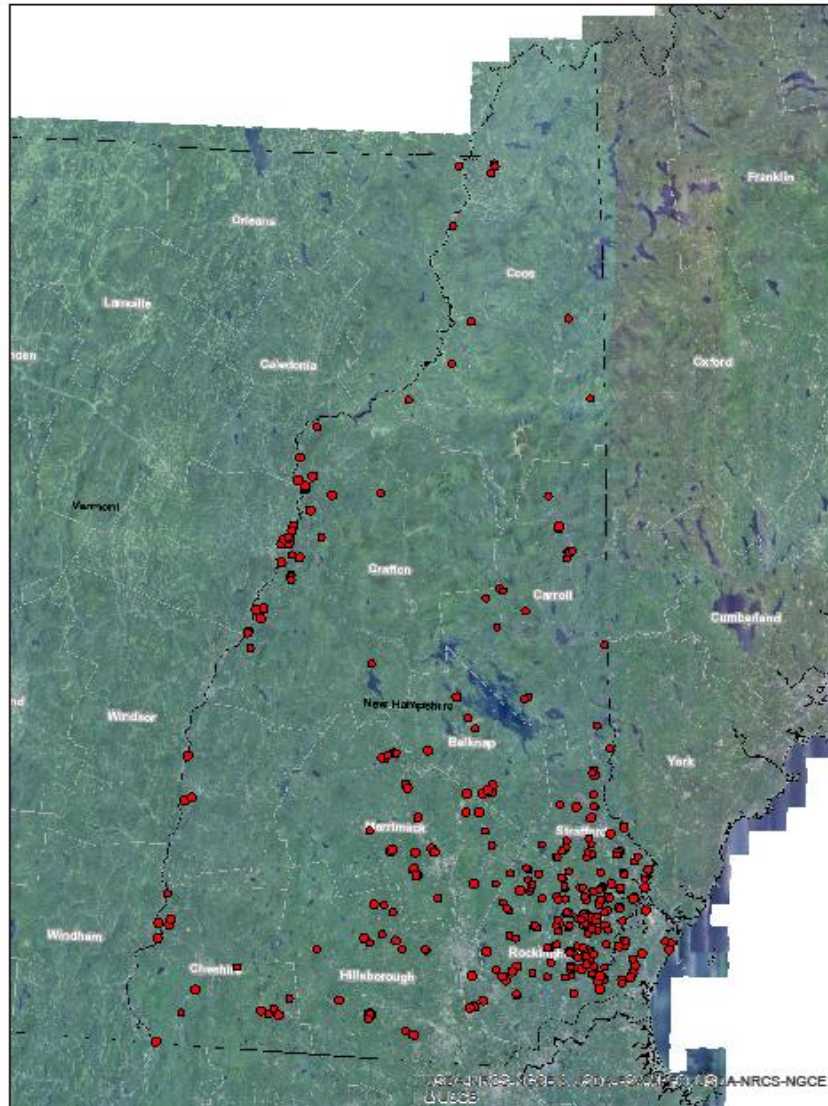


1. **Establishes permanent easements on agricultural lands.**
2. **Must have prime, statewide, or locally important soils.**
3. **33% must be in agricultural use.**
4. **Requires match**
5. **NRCS is the secondary easement holder**





USDA-NRCS New Hampshire Easement Lands



315 easements and 26,604.06 acres total



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Greenland NH 1962



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Greenland NH 2011



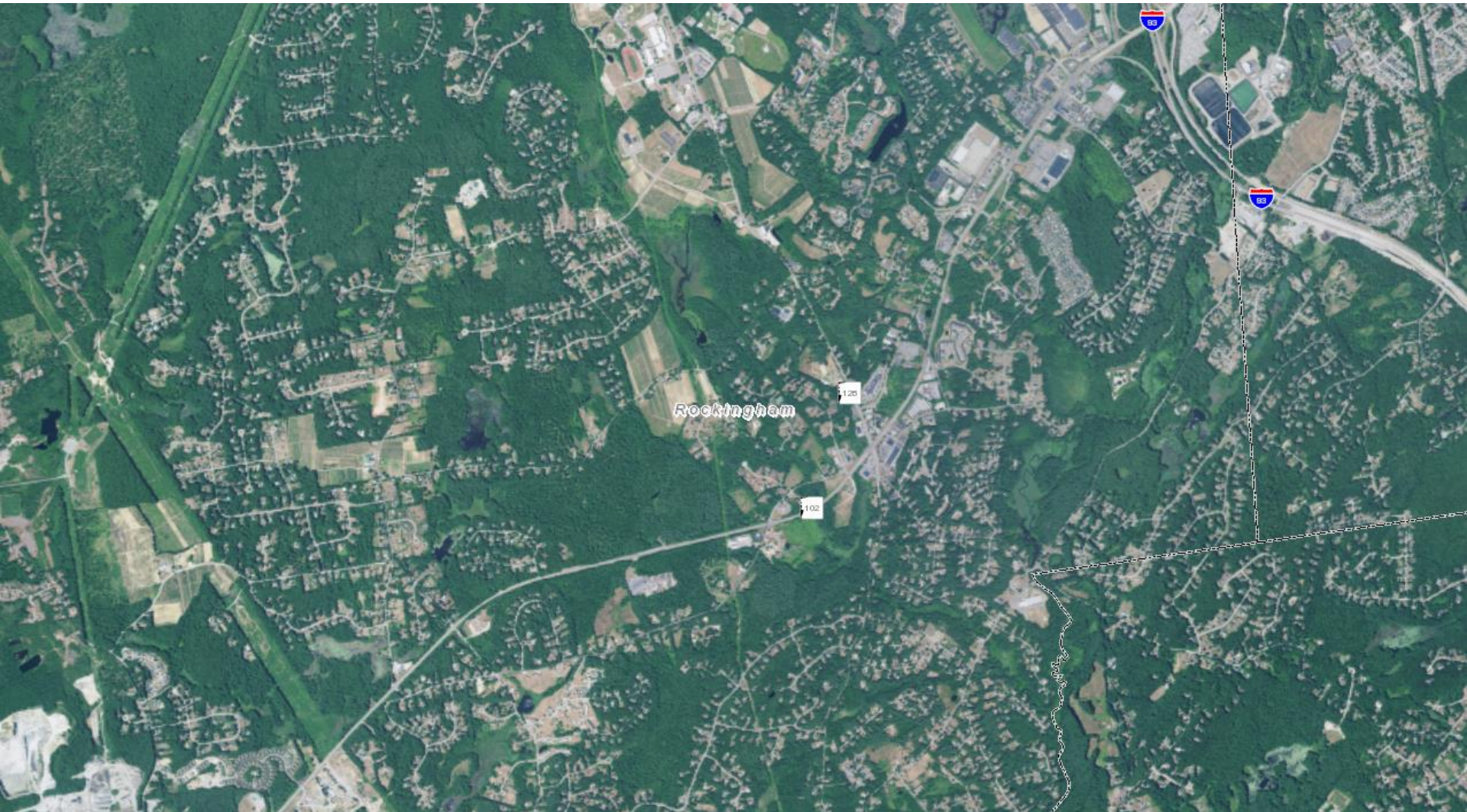
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Londonderry 1962



Londonderry 2011



Wetland Reserve Easements



- 1. Requires at least 50% of the property to be in wetlands, riparian areas, or areas of significance.**
- 2. NRCS pays 100% of lower – appraisal, Geographic Area Rate Cap, or landowner offer.**
- 3. Requires a restoration component (paid by NRCS)**







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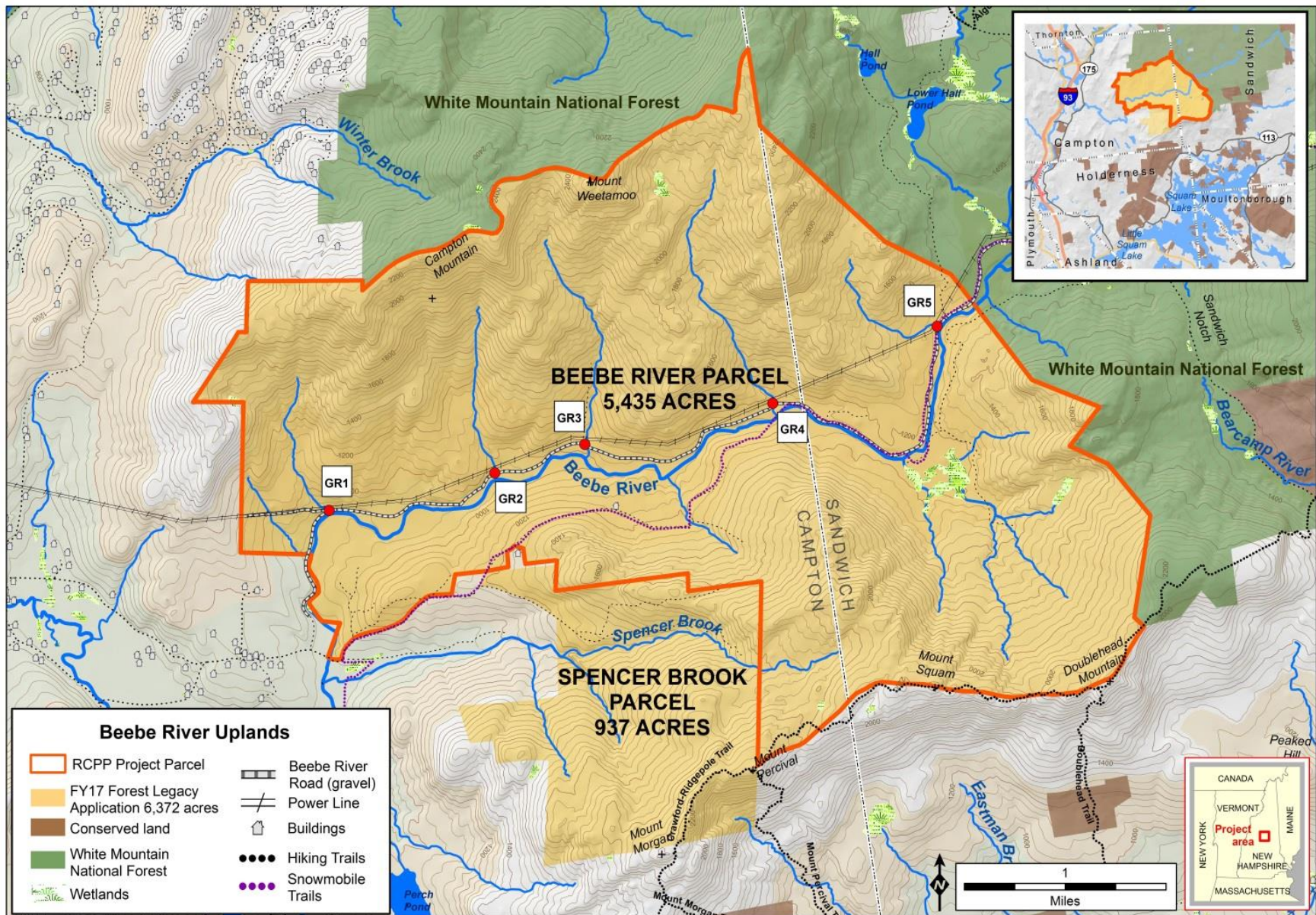


Regional Conservation Partnership Program

- **\$300,000,000 annually – partner lead effort – 5 Year agreements.**
- **Utilizes all NRCS Programs – Annual announcement**
- **2 Subaccounts (State and Critical Conservation Areas)**
- **Financial & Technical Assistance (Entity & NRCS)**
- **EZFed Grants**









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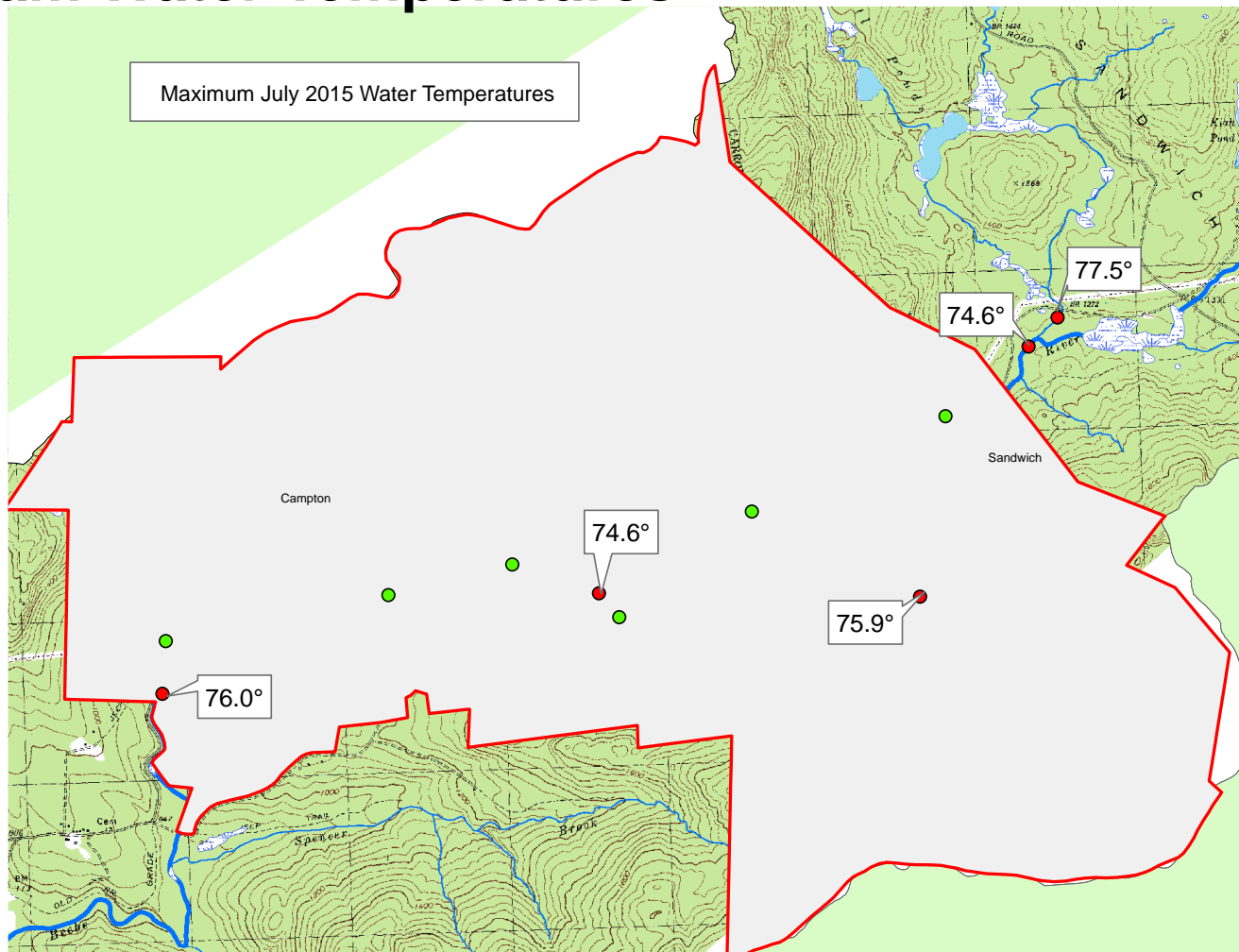
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2015

Beebe River Mid-Summer Main Stream Water Temperatures



**** exceeded suitable temperatures for brook trout**





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Beebe River - A Collaborative Partnership



The Conservation Fund



Towns of Campton & Sandwich

Natural Resource Conservation Service

White Mtn. National Forest

NH Fish & Game Department

Multiple NH State Agencies

Trout Unlimited – New England

Tin Mtn. Conservation Center

Plymouth State University



Pemigewasset TU Chapter – Volunteer Support

And Lots of Local Residents Who Support the Project



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Emergency Watershed Protection



- 1. NRCS establishes agreements with local entities as a sponsor.**
- 2. Must be a threat to life or property**
- 3. NRCS contributes 75% of the project cost and the design/technical assistance.**





10/12/2005

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New Hampshire NRCS

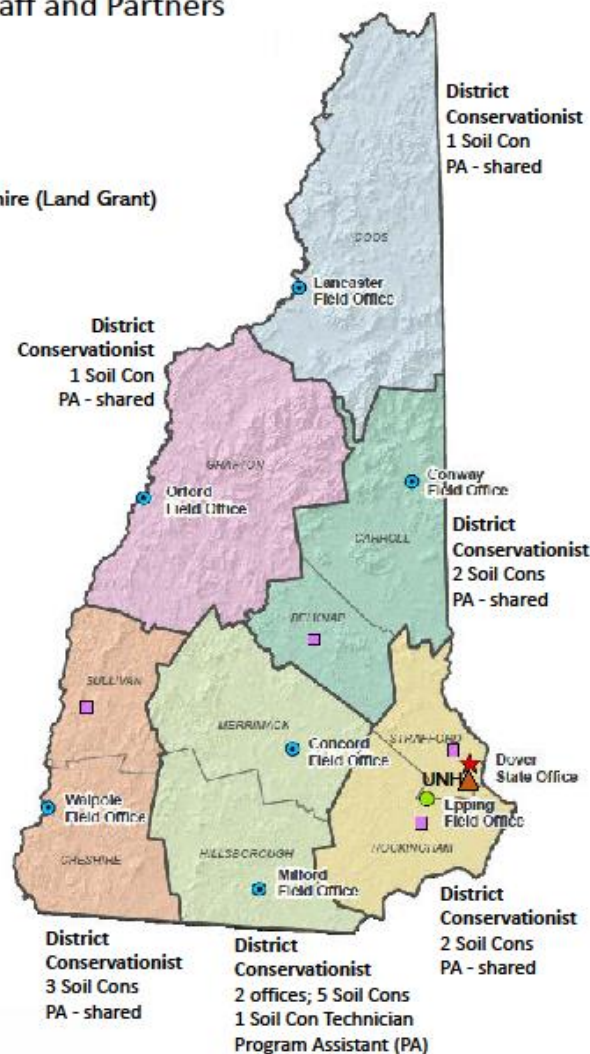
Field Office Locations and Staff
Statewide Technical Staff and Partners

April 2019

-  Conservation Districts
-  Joint Location CD-NRCS
-  NRCS Field Offices
-  NRCS State Office
-  University of New Hampshire (Land Grant)

- 2 Field Engineers 2 CE Techs
- 1 Soil Health/Toolkit
- 1 Biologist/Forestry
- 1 Grazing/Livestock
- 2 Soil Scientists
- 2 Easement Planners
- ACES Conservation Planner

- Partners Delivering Technical Assistance (many with RCPP \$)**
- UNH Coop Ext – Foresters
 - NHACD planners
 - Wildlife Management Institute – Habitat Biologists
 - NH Fish and Game - Habitat Biologists
 - NWTf forester



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